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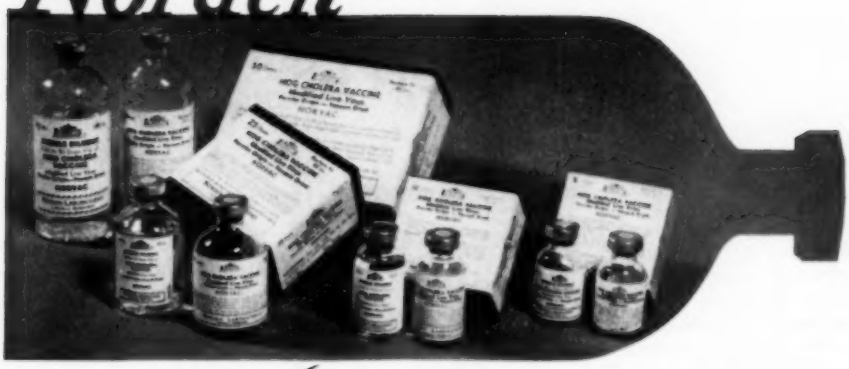

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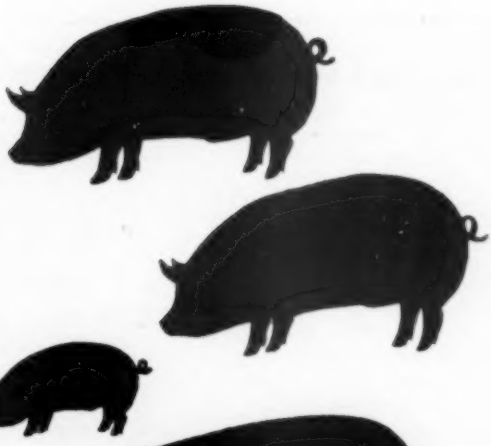

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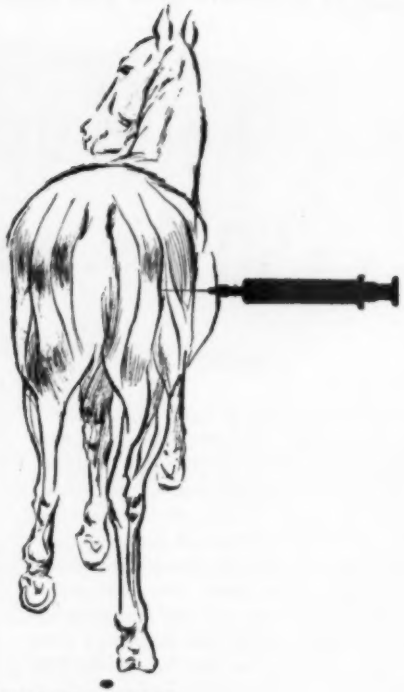

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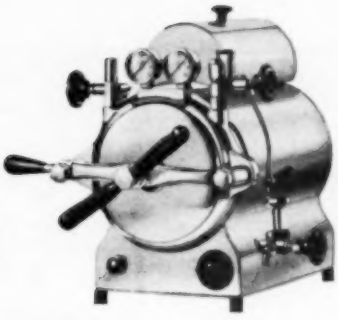

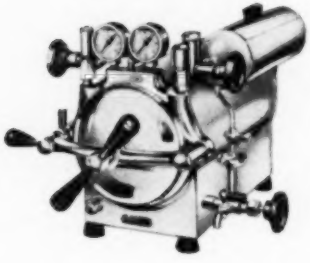

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AVMA ☆ Report

Veterinary Medical Activities

✦ Twenty-five seniors from the Alabama Polytechnic Institute at Auburn, Ala., visited the AVMA office on March 25 as part of a tour to Chicago and Indianapolis.

* * *

✦ President W. L. Boyd attended the annual convention of the American Animal Hospital Association in Minneapolis, May 6-8, and participated in the program.

* * *

✦ The Committee on Standards for Veterinary Hospitals is compiling a register of veterinary hospitals by means of a questionnaire. The register of hospitals will be included in the 1954 AVMA Directory.

* * *

✦ The Local Committee on Arrangements for the Ninetieth Annual Meeting of the AVMA, July 20-23, in Toronto, met in the Royal York Hotel in Toronto on April 14. Plans for the Convention are almost complete. See p. 407 for details.

* * *

✦ The third annual pre-Convention conference of editors of veterinary medical publications, secretaries, and public relations and ethics committeemen of constituent associations will be held on Sunday, July 19, the day before the 1953 AVMA Convention opens. The final program is being developed and will stress the overall public relations responsibilities of the profession.

* * *

✦ Assistant Executive Secretary C. D. Van Houweling spoke to the student chapters at the University of Missouri and at Kansas State College on April 22 and 23, respectively. He discussed the military obligations of students and recent graduates under Selective Service.

* * *

✦ Reports from standing and special committees are being preprinted for mailing to the delegates to the House of Representatives and the Executive Board. This advance mailing of committee reports makes it possible for delegates to study them carefully prior to coming to the Convention.

* * *

✦ Dr. T. S. Gregory, principal research officer of the Animal Health Laboratory, Melbourne, Australia, visited the Association's headquarters on April 22 and discussed with staff members matters of common interest to the Australian and American associations and the veterinary profession in general. Dr. Gregory is spending a month in this country under the auspices of his own government and the U.S.D.A. to study developments in the field of animal health and production.

* * *

✦ The Association was represented by staff members at the third annual meeting of the National Institute of Animal Agriculture held at Purdue University, Lafayette, Ind., on April 20 and 21.

* * *

✦ A "NEWS FROM WASHINGTON" page in the JOURNAL is becoming a regular feature and will be continued at least while Congress is in session. It is on page 412 of this issue.

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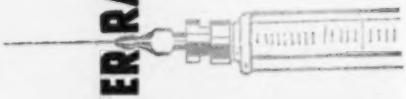

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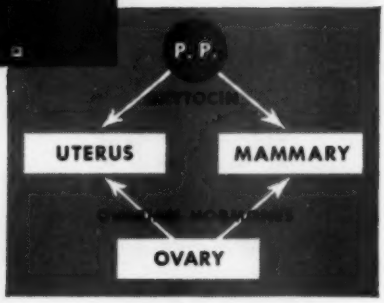

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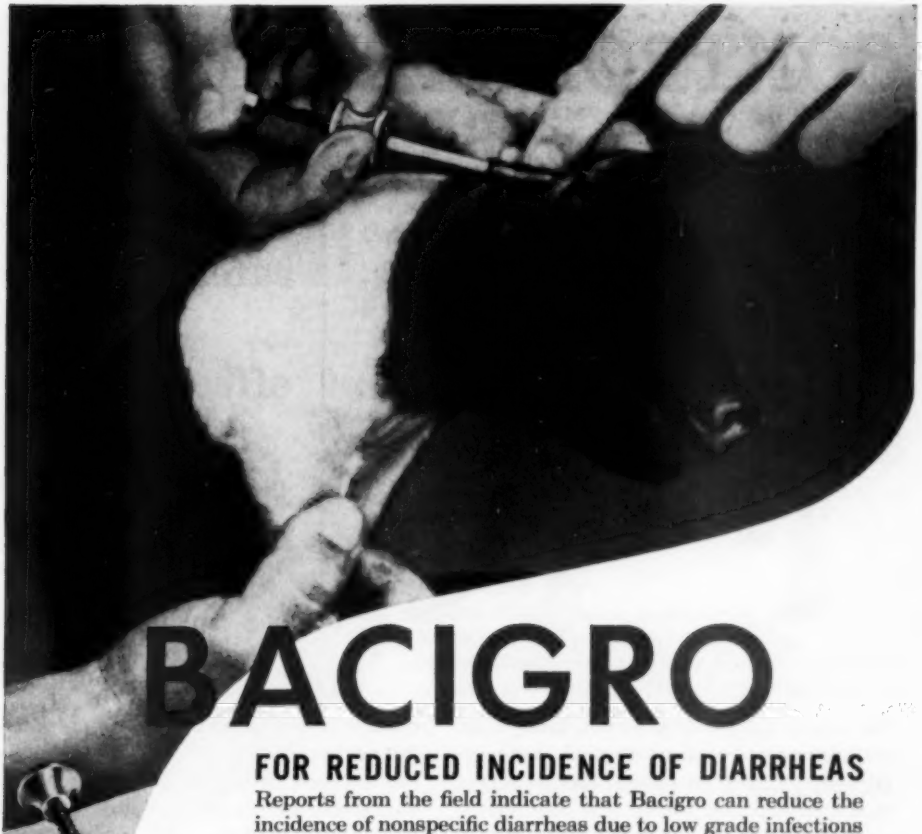

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2. Blamey, E. R. Coagulation in Seeping Hemorrhage – Evaluation of Koagamin, J. Am. Vet. M. A. 119:291, 1951.
3. Klausman, B. S. The Use of a New Chemotherapeutic Agent to Arrest Bleeding in Animals, Vet. Med. XLVI: 282 (July) 1951.

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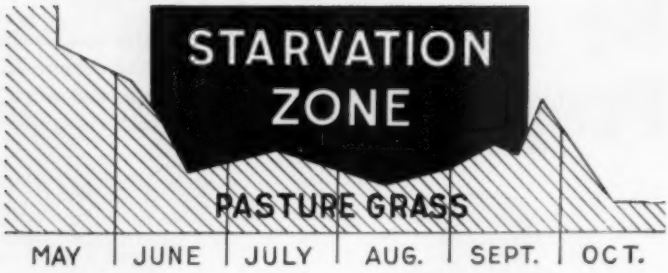

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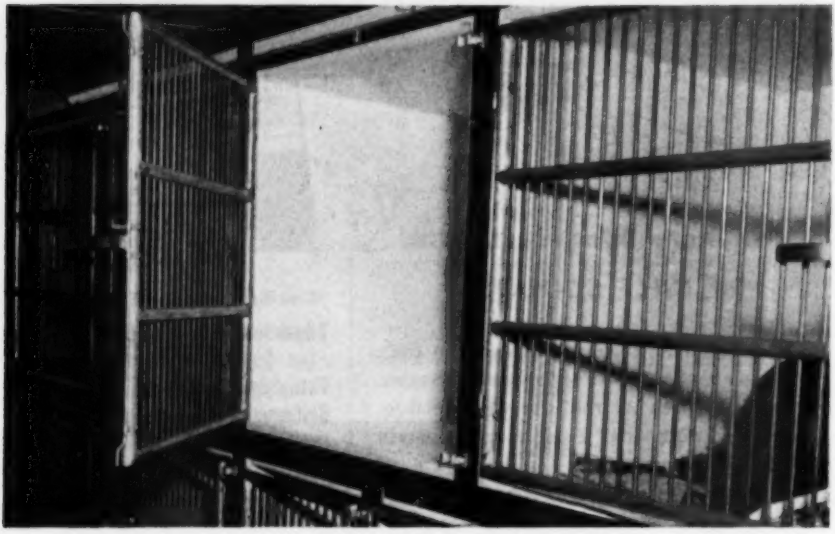

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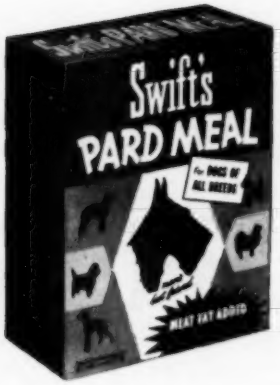

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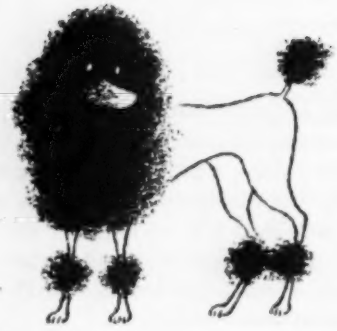

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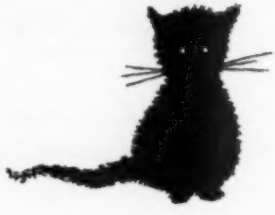

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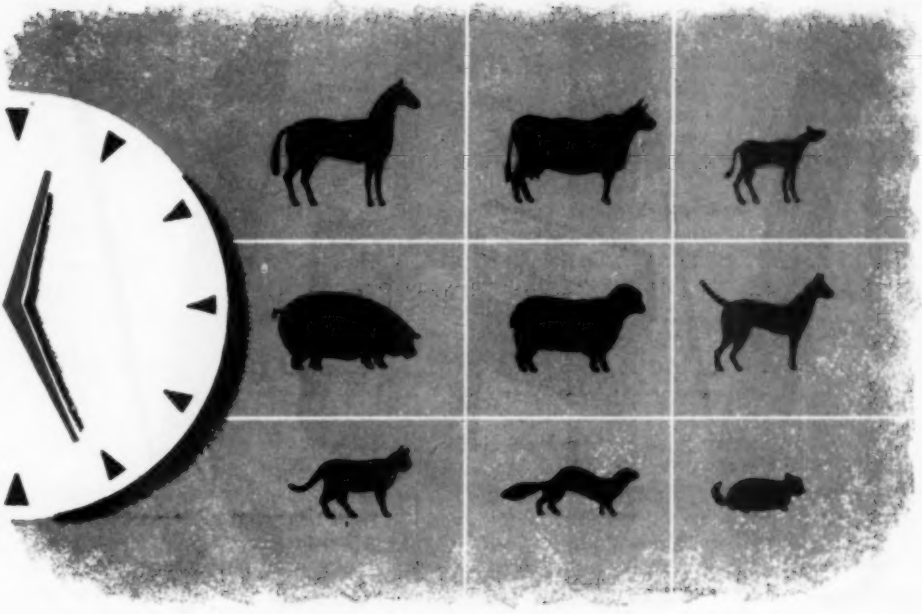

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The Continuing Quest for the Cause of Bloat in Ruminants

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Ithaca, New York

INTEREST in acute tympanites (bloat) in cattle and sheep has increased markedly in recent years. Stockmen, animal husbandmen, veterinarians, agronomists, plant physiologists, and others are becoming acutely aware of the seriousness of the problem. Increasing interest is due largely to more intensive feeding and pasturing practices, to the large increase in legume pasture acreage and, possibly, to a more intensive pasture fertilization program.

General interest has exceeded carefully controlled experimental work on bloat. Experimentation has been somewhat sporadic and individualistic in character, kept alive by comparatively few people working on their own initiative. This approach to a complex problem has its strong points but also has its limitations.

Bloat is a confusing entity and probably much more complex than is generally understood. Nomenclature, treatments, and theories of the cause all indicate a deficiency in fundamental knowledge. Udall[1] includes bloat in the acute indigestion syndrome in which gaseous distention of the rumen and reticulum is the predominating symptom.

Hutyra, Marek, and Manninger[2] define acute flatulence in ruminants as a "rapid distention of the rumen and reticulum due to the formation of gases." They say, "chronic tympanites does not usually endanger life *per se*, but its repeated occurrence impairs nutrition."

Wooldridge,[3] besides including a few additional synonyms which do little to clarify the issue, defines bloat as "a distention of the rumen by gas formation as a result of fermentation of the contents of the organ." These authors attempt to classify bloat in the usual medical manner as acute when the rumen is greatly distended and there is danger of suffocation; subacute when the swelling is easily compressible and there is little evidence of uneasiness; and chronic when the tympanitic condition persists for several weeks. They also say that bloat can be primary or secondary. Their final classification in the present author's opinion is a very important one and one on which there has been considerable difference of opinion. They describe "cases in which the gas lies in bulk on top of the ingesta," and, "cases wherein the fermented gas exists in agitated and intimate mixture with the entire contents of the organ, akin to a boiling or effervescent mass in a cauldron, so that only a little bubbling of gas follows the use of the trocar, and little or no relief is afforded."

In these definitions and descriptions of the disease, no mention is made of the *mechanism* by which the gases are formed or retained in these unusual amounts. No mention is made of normal intraruminal pressure variations or of the pressures existing in the various kinds of bloat in either cattle or sheep.

There is little mention of time factors, *i.e.*, the time after which noticeable distention begins and the time when the animal's life is in danger.

One thing common to most descriptions is that death is due to mechanical inter-

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ference with respiration and circulation, resulting in suffocation and death. Apparently, the suffocation which they describe is due entirely to mechanical interference. This problem needs clarification.

The brief description of postmortem findings is of little help. It is possible that certain lesions attributed to the antemortem period may have occurred postmortem.

An excellent review on bloat by Cole *et al.*,[4] 1945, contains a comprehensive bibliography. No attempt will be made in this paper to make further mention of work reported before 1945, unless it is pertinent to comments made in this discussion.

An intensive coverage of the literature since 1945 has just been made, but mention will be made of only those papers which, in the present author's opinion, add to our knowledge of the subject or present interesting hypotheses. For clarification, the subject will be treated in outline form.

REVIEW OF THE DISEASE FROM 60 A. D. TO THE PRESENT TIME

Historical.—Bloat is not entirely a new disease of ruminants. It was described by an ancient Roman author in 60 A.D.[5] in terms which leave no doubt that the symptoms have not changed much through the centuries. His treatment included "pouring sour vinegar through the left nostril and putting 2 oz. of grease in the jaws." It is a little embarrassing when one considers the lack of progress that has been made in treatments.

Incidence.—Although the condition has existed for centuries, it is difficult to determine through historical evidence whether the incidence has increased. One can only guess that it has. A number of surveys have been made in recent years but several factors make statistical and other interpretations difficult. Thus, opinions differ appreciably (1) as to what constitutes severe acute bloat, and (2) as to whether bloat *per se* has caused death. In spite of this and of the saying that questionnaires are the lazy man's way of collecting inaccurate data, it might be safely said that some very definite information has come out of such surveys, as well as from the wide experiences of competent persons working with bloat. The observations of livestock men must certainly be considered seriously.

An excellent survey made by M'Candlish[6] in Scotland during the summer of 1930 indicates that the incidence of bloat is economically important, at least in the Rhinns of Galloway. Another survey conducted in Minnesota[7] from May to October, 1948, covering 11,205 cows, one half of which were pastured on alfalfa and the other half on sweet clover, showed 182 cases of bloat, 50 of which were fatal. Twenty-eight of the latter were on alfalfa, 20 on sweet clover. There were 6 cases of bloat on nonlegumes. It was not stated whether any of the 6 cases were fatal. These and other studies can be summarized as follows:

a) The incidence of bloat is increasing, especially in areas where the acreage of legume or partial legume pastures has been increased.

b) Legumes are the worst offenders, some legumes causing more trouble than others.

c) New seedings cause less trouble than the same pastures on the second and in subsequent years. Hay aftermath (second cutting) has caused considerable trouble.

d) Legumes cause most trouble during the periods of lush, rapid growth.

e) Bloat does occur occasionally on nonlegume pastures, but it is comparatively rare.

f) The incidence varies in different years. There is also a seasonal variation.

g) Bloat is more apt to occur in certain areas than in others.

h) Contrary to some opinions, fatal bloat does occur in the feedlot on grain and hay. The present author recalls a loss of 28 steers in a large feedlot in eastern Oregon. They were being fed chopped alfalfa hay (a mixture of first and second cutting) and a mixture of equal parts of ground rye and barley.

i) Bloat is insidious in nature and can not be produced experimentally at will.

j) Some animals have a greater tendency to bloat than others. It is usually the rapid eaters that are more likely to bloat. There may also be genetic weaknesses.

THEORIES CONCERNING THE CAUSE OF BLOAT

A) Physical theories based on anatomical arrangements or the physical nature of the feed or ingesta.

a) *Excessive Consumption of Dense Feed Theory.*—This theory is not new but has been given increased attention by Jacobson and his associates.[8] By running bluegrass and alfalfa through a meat chopper they observed that alfalfa forms a more compact mass than blue-

grass. They observed that grazing cows may ingest 50 to 100 lb. of succulent feed before resting. This material remaining in a compact mass would force the stomach down against the abdominal floor. Since the cardia and the reticulo-omasal orifice are connected with each other by the esophageal groove, this would pull the cardia down and trap the gas. As fermentation began to increase, the freshly eaten mass would be buoyed up by the generated gas and might help to block the escape of gas. Increased pressure would seal the exit more firmly.

Comment.—The present author has palpated the cardia during insufflation experiments.[9] A balloon was passed via the stomach tube, inflated and pulled up against the cardia. Rumen insufflation was started with the arm sealed in the fistula opening. Palpation revealed that an extensive funnel-shaped dilation developed around the cardia and the animal eructated freely. This cardia dilation before eructation has been observed by Amadon and Detweiler[4] (personal communication to Dr. Cole) and perhaps by others. The author has raised the water level above the cardia and elevated the caudal end of a fistulous cow. This finally prevented eructation but, even here, some difficulty was experienced in preventing it. Nichols[10] has done similar experiments in sheep. It is assumed that water would follow the contour of the funneled cardiac region much more effectively than ingesta. Experimental blocking of the cardia is not an easy procedure.

b) Excessive Gas Formation Theory.—This theory has been widely accepted until comparatively recent times. Cole and associates[11,12] and Quin[13] have done extensive work on gas formation both *in vitro* and *in vivo*. Although there is some difference of opinion, it is quite widely agreed that, pound for pound, there may be considerable difference in rate of gas formation from different feeds. However, most workers are of the opinion that if the eructation mechanism is working normally, no difficulty will be experienced in expelling all gas that would be formed.

Comment.—These opinions are based on experimental intraruminal insufflations of the various gases and *in vivo* measurement of rates of gas formation. Both methods have their weaknesses. It is impossible, even by bubbling gases through the ingesta, to accurately simulate natural fermentation. It is also impossible to accurately measure rates of gas formation *in vivo*, since changes of intraruminal pressures, variations in liquid content (moistness of rumen wall), and the dispersion of the gas in the rumen (frothy or overlying) all influence rates of gas absorption from the rumino-reticular division of the stomach.

c) Surface Tension Theory.—This theory embraces any material which will change surface tension so that the gases of fermentation will tend to accumulate in countless bubbles throughout the ingesta instead of rising to the top and collecting in a gas pocket above the ingesta.

Factors affecting surface tension can be included in two subheads.

1) Saponins.—These are found in various plants and are abundant in alfalfa and other legumes. M'Candlish[14] claimed that saponins might contribute to the development of bloat. Kick, Gerlaugh, and Schalk[15] believe that frothiness is the factor responsible for bloat in cattle fed corn in the feedlot. Quin[16] more recently has done some interesting work on the saponin theory and states that the saponins play an important part in the pathogenesis of frothy bloat. They have not been able to produce frothy bloat by injecting saponins into the rumens of sheep.

2) Saliva and Its Effects on Frothiness of the Ingesta.—Clark and Weiss[17] have recently demonstrated the existence of a salivary reflex initiated by mechanical stimulation of the mucous membrane of the forestomachs. They observed that "sheep fed exclusively on green lucerne had a tendency to froth, but the type of froth formed was directly dependent on the consistency of the ingesta. When the rumen content was watery, the gas bubbles rose freely to the top to form a layer of unstable free froth at the top. As the consistency increased there was a greater tendency for the gas bubbles to become entrapped in the thick, viscid material." The consistency of the ingesta was dependent upon salivary secretion which in turn was reflexly stimulated by the presence of coarse material in the ingesta. The greater the salivary secretion, the less was the tendency for froth formation. Afferent pathways of this salivary secretion reflex were carried by the vagus nerves.

Comment.—Clark and Weiss have done some exellent work on the physiology of eructation and the salivary reflex in ruminants. The correlation between the amount of saliva secreted and the amount of foam formation and the reflex stimulation of salivary secretion offers a more physiologically sound hypothesis for the cause of bloat than some other theories that have been presented. A discussion of Weiss'

work on the physiology of eructation will be presented later.

d) Physical Deficiency Theory.—This theory was advanced by Cole and associates[11] and has been widely accepted. They say, "bloat most frequently results from the absence of the stimuli necessary to initiate belching." As Schalk and Amadon[18] have shown that "rumination is the result of a highly complex, reflex mechanism dependent upon proper stimuli, the nature and quantity of the food, and quite definite moisture requirements. The phenomena of regurgitation, and the initiation of rumination is the culmination of a systematic succession of events governed by a very complex reflex mechanism." They induced regurgitation artificially by rubbing a wisp of hay, introduced through a rumen fistula, over the inner walls of the rumen. Cole and associates go on to say, "in our opinion, the belching mechanism is controlled in a somewhat similar manner . . . yet increased pressure in itself does not open the cardiac orifice for when gas was artificially introduced, the pressure frequently rose much higher than in any normal animal, and yet gas escaped only during ruminal contraction. The invariable occurrence of bloat in ruminants after death also emphasized that the release of gas from the rumen depends upon a functional reflex mechanism. The cardiac orifice is no doubt opened for gas to escape by a reflex mechanism . . . in our opinion this stimulus must be augmented by the scratching of the rumen walls with roughage."

Comment.—This theory has received wide acceptance and an unusual amount of publicity in this country. It has not been accepted abroad as enthusiastically, especially where active work is being done on bloat. Clark[19] says, "It is difficult to understand why rumination and belching, although similar mechanically, should be initiated by the presence of coarse material in the rumen. Such matter requires rechewing and it is logical that its presence should cause rumination, but as it produces little gas, its connection with belching is obscure."

The association between ruminal motility and eructation is also not clear. Clark and Quin[20] have shown "that under certain circumstances sheep can belch gas artificially introduced into the rumen despite ruminal paresis induced by prussic acid. Conversely, frequent and strong ruminal contractions are often seen in animals suffering from acute bloat." All of these are important points and strongly indicate the need for more carefully controlled work on the physiology of eructation.

Further, it has been shown that any major changes in ration not only change physical factors in the ingesta but also may change the microflora and microfauna and may thus have an important bearing on the chemical nature of the ingesta.[21] Little or no attention has been given to these changes.

B) Biochemical theories.

a) Hydrogen Cyanide Theory.—Clark and Quin[20] tested the effect on inhibition of eructation in sheep and concluded that their experiment afforded no evidence for incriminating the cyanogenetic factors in plants as being associated with the etiology of acute bloat in ruminants. Evans and Evans[22] incriminated cyanide as the causative agent in the production of bloat. One liter of clover juice obtained from 5 lb. of fresh clover introduced into the rumen produced cyanide poisoning effects; 200 mg. of HCN obtained from 1 liter of clover juice was twice the lethal dose for a 100-lb. sheep. Sublethal oral doses caused a cessation of rumen movements. Dougherty and Christensen (to be published) have shown that the cyanide content of several plants (including 3 different legumes) varies considerably and that birdsfoot trefoil, which contained approximately 19 times as much cyanide as Ladino clover, has a history, in this country, of causing little or no bloat. It has been said that trefoil is eaten more slowly by ruminants and is definitely less productive on good soils—both factors perhaps contributing to the low incidence of bloat on this type of pasture. Toxicity trials with sheep showed that 318 ml. of trefoil juice, obtained from 6 lb. of clippings, injected into the rumen was lethal. When 1,500 ml. of alfalfa juice was given via stomach tube, no symptoms were noted. The same amount of Ladino clover juice had no effect. These trials throw considerable doubt on the importance that cyanide plays in the pathogenesis of bloat.

b) Flavones.—Ferguson,[24, 25] in his research at Jealott's Hill, has found an active principle in legume juice which causes a partial paralysis of the isolated rabbit gut. "Safe" grass juice either had no effect or had a stimulating effect on the isolated gut. He has isolated a flavone, 3' 4' 5 trihydroxy 7 methoxy flavone, having a pale yellow color and a vitamin P-like activity. He postulates that this smooth muscle inhibiting substance may play some part in the pathogenesis of bloat.

Comment.—This is excellent work and although, at present at least, it may be no nearer to the answer to the question, it does present a new and important approach to the problem. Going to the plant for a biochemical explanation is as logical an approach as any so far advanced. There is one point that needs further clarification. Ferguson's work shows that the flavones

decreased quantitatively on successive cuts during the summer and little could be obtained from the third growth in August. In this country, in certain parts of the Pacific Northwest, second and third cutting alfalfa will cause more bloat trouble than first cutting. Pasture aftermath is also quite often incriminated.

c) Allergy Theory.—Kerr and Lamont[26] and Lamont[27] noted the high incidence of bloat following the second dose of trichomonal antigen. These animals had received a first (sensitizing) dose seven to ten days previously. They postulate that histamine release may be involved, and were able to relieve the symptoms with 3- to 5-cc. doses of adrenalin. They also state that adrenalin has been tried with satisfaction on field cases of bloat.

Comment.—This is another interesting approach to the bloat problem and certainly one worthy of further consideration. The rumen-paralyzing effect of histamine has been known for some time.[28,29] The existence of a histamine-like substance in unusual amounts in the rumen ingesta of 3 steers that had just died of bloat was reported by Dougherty.[30] Whether it plays a part in the pathogenesis of bloat needs more proof. The present author noted what may have been a similar type of bloat in goats gassed with phosgene. In gas trials during the last war, goats were used as test animals. If the goats were well filled with good alfalfa hay before being placed on the target, the ones exposed to the gas would bloat within fifteen minutes after gassing. Only the gassed goats would bloat.

TWO THEORIES PRESENTED

Two theories which are as yet no more than working hypotheses are presented at this point. It is hoped that they will be accepted as such.

Toxic Factor in Rumen Ingesta.—Recently, Dougherty and Cello[31] have offered another working hypothesis for the acute indigestion syndrome including bloat. A toxic substance has been found in the rumen ingesta of cattle and sheep. This material depressed the blood pressure of dogs and goats (anesthetized), inhibited rumen motility in sheep (unanesthetized), stimulated respiration in all intact animals, stimulated motor activity of the lower gut in the intact dog and goat (anesthetized) and the sheep (unanesthetized), and had variable effects on the isolated ileum segments of the rabbit. This factor(s) has been found in the rumen ingesta of cows with acute indigestion, 2 cows that died of bloat, and in the ingesta of experimentally overfed sheep.

Comment.—Although little work has been done on this factor in connection with bloat, it is being presented along with other theories in an effort to stimulate interest and possibly to divert some of the preponderance of effort from the purely physical approach to the bichemical-physiological approach to the pathogenesis of bloat.

Phosphatase Theory.—Lienert[32] has offered another interesting hypothesis. He states that the bacteria-free rumen filtrate is very high in phosphatase and that phosphate is high in plants that produce bloat. Increased gas formation in bloat could be caused by increased phosphatase or by an increase in arsenates which are high in the plants that cause bloat. Arsenates stimulate phosphatase activity. The salivary source can not account for all of the phosphatase in rumen ingesta.

Comment.—This theory is relatively new and no other references can be found. It is being presented here as a matter of interest.

DISCUSSION

At this time, the present author would like to clarify one point. He is credited with developing the "toxic gas theory" of bloat. This work[9,33] was done hoping to throw some light on the cause of death in bloat. Quoting from Cole and associates,[11] "His theory really relates to the cause of death following bloat rather than to the cause of bloat." This was (and is) the correct interpretation of this work. It was hoped at the time that knowledge of the cause of death might eventually lead to an understanding of the cause of bloat. There is a possibility, of course, that the same factor or factors could be involved in both death and pathogenesis. This is assuming that death is due to causes other than mechanical interference with respiration and blood flow.

From the animal standpoint, many important questions remain to be solved. Two of the most important of these questions are: (1) the cause of death and the loss in production in animals that have recovered from a severely bloated condition; (2) the

physiology of eructation and the factors which inhibit eructation and gas absorption in the bloated animal.

One of these questions has received excellent treatment by Weiss.[34] He divides rumen contractions into two types: "(1) a backward moving cycle of contractions, involving a two-stage contraction of the reticulum, immediately followed by a contraction of the left dorsal and right ventral sacs, followed by a pause of varying length; (2) a forward moving ruminal contraction starting at the posterior dorsal blind sac, followed by another pause of varying length." These forward moving contractions are called eructation contractions and may or may not follow each major backward contraction. There may be a 1:1 rhythm or a 2:1 rhythm. This rhythm can change as a result of a pressure stimulus. In this work, the author feels that the cardia is kept closed mostly through external pressure exerted by surrounding organs and by pressure on the abdominal portion of the esophagus. The active dilatation of the cardia is described in detail, and the stimulus for this dilatation is initiated by pressure receptors in the rumen wall, the most sensitive of which are in the posterior dorsal blind sac. One cow was placed on a ration consisting solely of freshly cut tops of young lucerne. This ration had no adverse effects on the efficiency of eructation. This author concludes that eructation is an independent reflex mechanism with pressure receptors in the rumen wall (especially the posterior dorsal blind sac) which are stimulated by gas pressure. He also states that the efficiency of the eructating mechanism is influenced by frothing and overfilling of the rumen.

This work, like any other, will need confirmation. It is an excellent physiological approach to the problem. One criticism which may be made of the work of almost all of us is the tendency to premature extrapolation of our experimental results to the actual clinical picture. It is hoped that this work from the Onderstepoort station will continue and that confirmatory work will follow.

Among the many things that need clarification is the actual cause of death in bloat. Early insufflation work[9,33] and the physiological changes, caused the present author to doubt if death is due entirely to physical effects. This is a very important point and if certain biochemical factors are involved other than anoxia due to physical impairment of circulation and respiration, then it may contribute much in our search for the etiological factors.

Additional and carefully controlled studies must be made on the actual pressures existing in bloated animals, *i.e.*, severely bloated animals that are in a critical condition. Other physiological studies must be made on these animals. The present author has attempted such studies with disappointing results. The animals were either dead or bloating had stopped when he arrived on the scene. Pressures recorded on 3 bloated cattle that had recently died were between 72 and 75 mm. of mercury. Olson[35] experienced the same difficulty and recorded pressures ranging between 60 and 70 mm. of mercury above atmospheric pressure in dead bloated cows. This is an important point and must be answered before intelligent physiological studies can be made. Nichols[10] has insufflated sheep with 5 to 10 lb. pressure. If the above-mentioned data are significant, then Nichols' work has little meaning other than its demonstration of the effects of overfilling on eructation efficiency. It is doubted if bloat pressures are as high in sheep as in cattle, although this remains to be seen. Nichols' pressures of 5 to 10 lb. per square inch would be approximately 262 to 524 mm. of mercury, which would be nearly three to six times the highest recorded pressures in cattle.

One most important point that is seldom mentioned in discussing the importance of bloat is the reduction in milk production following severe but nonfatal bloat. This is important and needs further study. In beef cattle and sheep where production is evidenced in other ways, it may also be an important problem. Laboratory studies must be complemented by such field studies as are being conducted on the Mississippi Delta.[36]

Perhaps one of the most serious single factors is the loss of production of excellent legume pastures. Quite often after the loss of an animal or two, the entire herd will be taken off the offending pasture. This represents a serious loss in production and a great inconvenience. At the 1951 Rumen Function Conference, Dr. B. T. Simms called this "the insensible loss."

TREATMENT

Clark[37] has shown that turpentine and certain phenol preparations commonly used in bloat did not reduce the amount of gas formed and that *in vitro* experiments indicated that the therapeutic value of these drugs depended upon their surface tension action (defoaming agents). This hypothesis was later supported by *in vivo* experiments.[38] Quin and associates[39] have reported on the clinical use of one of these surface-active agents. Of the 155 cases of bovine bloat treated, 115 made complete recoveries. Some were given collateral medication or were tapped prior to treatment. The recovery rate was 80 per cent when the agent was used in tablet form (diluted with water) and 95 per cent when used in a ready-to-use suspension.

The mechanical methods of bloat treatment have been discussed widely so that they will not be included in this report.

Comment.—Clark's work[38] shows that the so-called antiferments in therapeutic doses have little or no effect on gas formation in the rumen. The present author (unpublished data) obtained similar results in a combination of *in vivo-in vitro* experiments (1941). Various antiferments were administered via stomach tube or balling gun to cows with rumen fistulas. After allowing ten to twenty minutes for the material to be mixed with the ingesta, weighed samples of rumen ingesta were taken and gas formation measured *in vitro*. These results were compared to *in vitro* gas formation in "pretreatment" samples.

The use of defoaming agents is a logical approach to the treatment of frothy bloat. However, it would do little good in the nonfrothy type since, as Clark states,[37] foaming may be a matter of degree. He thinks that most cases in South Africa are frothy, or partially so. In cases that are definitely frothy it would seem that contact of the agent throughout the ingesta would be a problem of some magnitude. In these extreme cases, there must be a minimal mixing of rumen ingesta.

Assessing the value of treatments of clinical cases is extremely difficult when it is a known fact that many cases will recover without any treatment. The present author attempted to obtain some pressure and other data from field cases of naturally occurring bloat. While waiting for a considerable number of cases to reach the final danger point, he noticed that in all cases they had returned to some state of normalcy in a relatively short time. In fact, he was unable to obtain data from a single case. These animals were on irrigated pastures (Pacific Northwest) where one might expect frothy bloat to occur. In assessing the clinical value of defoaming agents, the use of collateral treatments would tend to make such data of little significance. The antifrothing agents may, eventually, be proved to be of great importance in the treatment of frothy bloat. They need further critical clinical evaluation as well as controlled laboratory tests, preferably *in vivo*.

THE USE OF HARMLESS PASTURE MIXTURES

An important contribution to the progress of the knowledge of bloat was made when a Conference on Rumen Function was called by H. W. Marston, research coördinator, Agricultural Research Administration, in Chicago, Nov. 27-28, 1951. This meeting was attended by agronomists, animal husbandmen, veterinarians, and others. Its main function was to review the bloat problem from all aspects. A similar meeting is to be held this fall, mainly to determine what progress has been made during the past two years.

One of the most interesting features of the meeting was the interest shown by agronomists. This is a comparatively recent development in this country and should add greatly to our progress in the solution of this difficult problem.

Pasture mixtures were discussed at considerable length in this meeting and the prevalent opinion seemed to be that pastures containing 50 per cent or less of legumes are relatively "safe." The agronomists admitted, however, that soil fertility, climatic conditions, and animal grazing habits make the maintenance of such ratios rather difficult. Of course, as legumes decrease in proportion, production and soil-building activities suffer. We are gradually approaching our starting point, *i.e.*, the use of nonlegume pastures.

The agronomists agreed, and rightly so, that as soon as the animal physiologists, pathologists, and others determine the cause of bloat, they could then enter into the program with intelligent contributions. Until that time, they could be little more than sympathetic.

It is hoped that this paper will stimulate a renewal of interest in a most difficult and complex problem, a problem that unfortunately has been considered solved by many people directly or indirectly connected with it.

The insidious nature of bloat and the difficulties encountered by those who have tried to produce it experimentally have led to misinterpretation of results and to extremely slow progress. If natural bloat could be produced at will, progress could be accelerated greatly.

The present author wishes to include himself with those who wish to join him in the application of the following quotation from John Godfrey Saxe's Hindoo fable of the blind men and the elephant:

And so these men of Indostan
Disputed loud and long,
Each in his own opinion
Exceeding stiff and strong,
Though each was partly in the right,
And all were in the wrong!

The Moral:

So oft in theologic wars,
The disputants, I ween,
Rail on in utter ignorance
Of what each other mean,
And prate about an elephant
Not one of them has seen!

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The Veterinarian in Public Health

The following is a condensation of an editorial appearing in the *American Journal of Public Health* (Sept., 1951:1122) and is reprinted here for its information and interest.

It is a source of special gratification to the editor that we have been able to present to our readers in the last two issues of this *Journal* a substantial group of papers* in the field of veterinary public health.

Due to its importance, a special Expert Group on Zoönoses was set up under the joint auspices of the World Health Organization and the U. N. Food and Agricultural Organization which held its first meeting in Geneva in December, 1950, with Dr. B. D. Blood and Dr. J. H. Steele as its United States members.

This committee prepared a list of 86 different diseases actually transmissible between other vertebrate animals and man (20 virus diseases, 20 bacterial diseases, 10 nematode diseases, 10 trematode diseases, 9 cestode diseases, 8 protozoal diseases, 7 rickettsial diseases, and 2 fungus diseases), with 6 more diseases caused directly by insects and arthropods. The following ten seemed of sufficient importance to warrant intensive study: bilharziasis, the equine virus encephalitides, hydatidosis, leishmaniasis, leptospirosis, psittacosis, Q fever, rabies, trichinosis, and tularemia.

It is gratifying that a substantial number of veterinarians (21 candidates in six schools last June) are registering for the M.P.H. degree in our schools of public health and that this group was actively represented at recent A.P.H.A. meetings. They should feel at home with us. The doctor and the dentist have commonly been trained in schools where major emphasis was laid on the treatment of individual cases. The veterinarian has been accustomed to the concept of the protection of populations against crowd diseases and malnutrition. He fits with special facility into the family of public health.—C. E. A. WINSLOW, Dr.P.H.

*These papers were by Drs. C. K. Mingle, Riverdale, Md., R. J. Helvig, Washington, D. C., Oscar Sussman, Princeton, N. J., F. A. Todd, Arlington, Va., and C. H. Pals, Washington, D. C.

New Study Materials on Canine Eye Diseases and Bovine Cryptococcosis at Armed Forces Institute of Pathology

The director of the Armed Forces Institute of Pathology, Brigadier General Elbert DeCoursey, has announced that a study set on the pathology of the diseases of the canine eye has been added to the collection of the American Registry of Pathology and is available on a loan basis to members of the veterinary profession. The set includes 53 different microscope slides illustrating different lesions of the eye and its accessory organs.

Also available to educational institutions for teaching purposes is material from a recent outbreak of bovine cryptococcosis.

Those interested in obtaining the aforementioned materials should write to the Armed Forces Institute of Pathology, 7th St. and Independence Ave., S. W., Washington 25, D. C.

When Moving, Advise the AVMA

State Problems in the Control of Garbage-Borne Diseases

OSCAR SUSSMAN, D.V.M., M.P.H.

Trenton, New Jersey

AT THE PRESENT time, two regions of the country—the Far West and the North Atlantic Coast—which raise only a small portion of the total hogs marketed in the United States are jeopardizing the livestock industry of the entire nation. The reason is raw garbage feeding, which spreads trichinosis, hog cholera, vesicular exanthema, and even foot-and-mouth disease.

Hogs are produced in every section of the United States, but among the states many different practices exist with regard to the methods of feeding and of moving fattened hogs to market. It is evident, therefore, that problems in the control of garbage-borne diseases of human beings and swine will vary with the state and the section of the country. In general, two facts must be considered: first, does the state export or import hogs and pork, and second, does it export or import garbage. To illustrate, California is a hog- and pork-importing state as well as a raw garbage-feeding state. Its 105 million people consume roughly 750,000,000 lb. of pork annually, of which only 160,000,000 lb. are produced in California. However, California produces nearly 100 per cent of the raw garbage fed to its hogs and, therefore, could handle the major share of its garbage by *intrastate* regulations. Iowa and its neighbors, on the other hand, produce more pork than they can eat and feed little if any garbage, thus presenting a completely different problem. About the only raw garbage-fed hogs ever imported into Iowa and the other cornbelt states are for use in the manufacture of hog cholera serum. New York and Pennsylvania, like California, produce insufficient pork to meet their needs but, in contrast, both export large quantities of raw garbage which may be returned to them in the form of U. S. inspected and approved trichinae-infected pork. These illustrations point up the complexity of the total problem.

Federal regulations and controls now in effect which have a bearing on the garbage-borne diseases of swine are:

1) The United States Public Health Service Interstate Quarantine Regulation, which requires the cooking of raw garbage moved interstate if it is to be fed to swine.

2) The United States Department of Agriculture, Bureau of Animal Industry rules, which require the inactivation of trichinae cysts in all pork that may normally be eaten as purchased or in a semicooked state.

THE NEW JERSEY PROBLEM

The present status of New Jersey's hog-raising industry may serve to point out the ineffectiveness of existing federal regulations and the problems these regulations create for some states.

Raw garbage is fed on more than 300 New Jersey farms from which about 150,000 hogs are marketed annually. The human population of nearly 5,000,000 consumes approximately 350,000,000 lb. of pork annually, of which less than 35,000,000 lb. are produced in the state, about 28,000,000 lb. of it from raw garbage-fed hogs. Approximately 75 per cent of the raw garbage fed to hogs is imported from New York and Pennsylvania. For more than ten years, with the knowledge and tacit consent of federal authorities, this garbage has been fed raw in contravention of the United States Public Health Service Interstate Quarantine Regulation. This has created a spirit of lawlessness in normally law-abiding citizens, including administrators of federal and state institutions. It would probably be better not to have such an unenforced and unenforceable regulation.

Paradoxically, recent efforts to enforce the regulations requiring the cooking of garbage which is moved interstate, are creating still other administrative problems in New Jersey. There are more than 300 swill-feeding hog farms of which 150 use interstate-moved garbage regularly, and another 50 to 75 farms use occasional shipments. The United States Public Health Service is presently tending to allow the cooking of garbage in the hauling trucks. With over 700 trucks involved, this would necessitate a huge inspection force. Several years ago, when such trucks were used for cooking potatoes, it was found that at the

From the State Department of Health, Trenton, N. J. Presented at the National Conference on Trichinosis, Dec. 15, 1952, Chicago, Ill.

end of the required cooking time some were mashed and steaming hot while others were cold and hard. Furthermore, the adequate cooking of garbage in such trucks provides perhaps more insurmountable technical difficulties than did the potatoes.

Any cooking system authorized must provide first for the licensing of the plant and operators and also for an adequate mechanical heat-recording apparatus. The mere harassment of an industry with procedures that only theoretically would destroy garbage-borne infections would leave all with a false sense of security and be open to challenge as worthless should infection again break out.

New Jersey, one of the prime producers of raw garbage-fed, trichinae-infected hogs and pork, still imports more since hogs fed raw garbage travel interstate with no restrictions and raw inspected pork is moved in with impunity. If trichinae-infected hogs and pork continue to move into New Jersey carrying the prestige and dignity of a federal stamp of approval, it nullifies garbage controls instituted within the state.

PROBLEM—STATES' RIGHTS VERSUS DISEASE CONTROL

Many states are similarly faced with the problem of trying to keep out federally inspected and approved garbage-fed and trichinae-infected hogs and pork. If a state were to attempt to prohibit federally inspected meat from entry, the hue and cry would be overwhelming. The realities of the situation, therefore, must be faced—states rights are one thing, but the right of a state to infect livestock and human beings of another state must bow to adequately enforced federal regulations.

Interstate controls on garbage, garbage-fed hogs, and garbage-fed pork to be effective must:

1) Quarantine on a state-wide basis live hogs or raw pork within any state which does not have and enforce a regulation requiring the adequate cooking of garbage used for hog feed, at license-cooking establishments where adequate mechanical recording apparatus is maintained.

2) Prohibit the interstate movement of raw garbage except under certain specified conditions, as:

a) For effective sanitary land-fill operations or incineration by specific permit only.

b) For manufacture, at licensed plants, into sterilized fertilizer.

c) For movement to licensed plants for cooking, with adequate mechanical recording apparatus, and the same trucks do not pick up the cooked material for distribution to the individual hog farm, unless the truck and equipment has been effectively sterilized, including attention to the personnel.

These controls will create other problems but they should not be of the magnitude presented by the prime problem of protection from biological warfare. The mask that vesicular exanthema in hogs offers for the introduction of foot-and-mouth disease must be recognized. In New Jersey alone, 81 herds with 115,000 hogs are in this threatening situation. The present national outbreak, it is said, started with U. S.-inspected pork which left California on a train and was fed in raw garbage to hogs in Wyoming.

Implementation of the above proposals, necessary to control trichinosis and other garbage-borne diseases of swine, may create challenging problems in two major categories. These were effectively pointed out in an editorial in the December issue of the JOURNAL (pp. 489-491). They are:

1) Lack of raw garbage-fed hogs considered essential by most producers, may result in at least a temporary insufficient hog cholera antiserum production unless we shift our methods of hog cholera control away from the use of virulent virus which often starts foci of infection.

2) Should the elimination of virulent commercial virus and the cooking of garbage result in hog cholera being eradicated as it has been in Canada, the hog cholera serum industry and a part of the veterinary profession would have to direct their professional activities into other channels and the control of other diseases.

These are definite problems which must be weighed and solved. On one side of the scale are the terrific costs to the entire swine industry of the current outbreak of vesicular exanthema and the continued world-wide concern because of the incidence of trichinosis in hogs and human beings in the United States. This side of the scale is also weighted with the benefits that would occur if hog cholera were to be eliminated. The other side of the scale is weighted with the chance that a hog cholera outbreak may occur when we would not have sufficient serum on hand to control it.

CONCLUSION

The success of any individual state's efforts to control garbage-borne diseases necessarily rests squarely on the effectiveness of interstate controls. Garbage-borne diseases of hogs can not be effectively controlled by the individual states themselves.

Federal regulations must be adopted in order that consumers may be provided with safe, wholesome, trichinae-free pork and to avoid the needless expenditure of indemnity and administrative and control monies at each new outbreak of a raw garbage-borne hog disease.

Preliminary Census Findings on Health Occupations

The February issue of *Public Health Reports* contains estimates (pp. 191-193) derived from preliminary summarizations of the 1950 census of population, showing the number of persons then employed in 17 health occupations. About 1,400,000 persons or 2.5 per cent of the "total civilian labor force" fell into those categories, not counting persons on active duty with the Armed Forces.

Table 1 gives a few of the figures in the article in *Public Health Reports* with comparisons to the 1940 census.

The article points out that "The census enumerations of several occupations closely allied to medicine are considerably lower than estimates of active practitioners in 1950 available from the professional associations" and attributes the difference to inclusion in association figures of persons in the Armed Forces and those who are retired, inactive, or engaged in other occupations. Even adjusting for these factors leaves the census counts substantially lower than estimates from other sources.

This is certainly true in so far as the figures for veterinarians are concerned. For example, the 1910 census figure for veterinarians was 11,652 and the AVMA estimate was over 12,000; in 1920, the figures were 13,494 and 14,000, respectively. In 1930, they were 11,863 and 12,000; and in 1940, the census said there were 10,597 veterinarians (instead of 10,717 as shown in the table) as compared to the AVMA figure of 12,000.

The 13,410 census figure for 1950 is nearly 2,000 lower than the AVMA estimate of 15,305, the latter figure having been based on careful calculations.

The census estimate of 863 female veterinarians in the United States in 1950 is obviously wrong; there are certainly not over 200 female veterinary graduates in this country. The census figure may represent a mistake in cataloging, as veterinarians, the female assistants or technicians employed by veterinarians in their offices and hospitals. The 1940 census figure of 79 female veterinarians may be correct, although the 1942 Procurement and Assignment survey revealed only 38 in a total of 11,494 veterinarians who returned the questionnaires.

It is expected that tabulations of 1950 census data by states will be available in the near future which will permit more detailed analysis of professional figures.

Anthrax Report

During January and February, 1953, anthrax was reported in 17 states, eight in the cornbelt, with a loss of at least 46 cattle and 38 swine. Contaminated feed was considered responsible for the loss of 3 cattle and 7 swine in two states.

Had California maintained the slaughter eradication program for vesicular exanthema used in 1932 while permitting the feeding of raw garbage it would have, by 1952, destroyed 2.5 million hogs at a cost in indemnities of over $50 million.—*R. E. Duckworth, D.V.M., Sacramento, Calif.*

TABLE 1—Persons Employed in Health Occupations, 1940 and 1950

	1950			1940		
Occupation	Total	Male	Female	Total	Male	Female
Physicians & surgeons	191,947	180,233	11,714	165,989	158,381	7,608
Dentists	75,176	73,024	2,152	69,921	68,874	1,047
Veterinarians	13,410	12,547	863	10,717	10,638	79
Nurses (professional)	398,194	9,638	388,511	352,486[1]	7,509[1]	344,977[1]
Pharmacists	88,087	80,854	7,233	77,779	74,563	3,216

[1]The 1940 figures include student professional nurses.

Disease Control in Scandinavia

RALPH S. YOHE

Chicago, Illinois

"WE DON'T have much trouble with contagious diseases here," the young Norwegian veterinarian told me. "In the part of the valley I serve, we have about 5,000 dairy cows and a lesser number of hogs and horses. Horses are fast giving over to tractors.

"With the exception of vibrionic infection and mastitis in dairy cows, we have few contagious diseases in Norway."

Later, Norwegian disease control officials told me that there had been no cases of brucellosis in Norway during the last year and that within a short time even the last vestige of tuberculosis in cattle will be wiped out.

Scandinavia has either eradicated or kept out a whole parade of contagious diseases that run rampant through the livestock herds and flocks in our own country. These include hog cholera, trichinosis, rhinitis, and vesicular exanthema in swine; Newcastle disease and fowl cholera in poultry; rabies in dogs. Brucellosis, tuberculosis, and anthrax have been brought under strict control.

How do they manage it? Well, let's look at their disease control programs.

Just as in our own country, they have an effective tuberculosis program to eradicate the disease from their cattle. Today the disease is disappearing. Finland and Norway have gone a step further. They have control programs for avian-type tuberculosis that infects both chickens and hogs. We have hardly started in this country on this control task.

Thirty years ago, 80 per cent of the Danish dairy herds had tuberculosis. Today, for all practical purposes, tuberculosis does not exist in Denmark. It is about the same story in the three other Scandinavian countries. In order to erase the last vestige of the disease in Norway and Finland, the entire reacting herd is generally slaughtered, and control measures are taken with the same precision that we used in America to eliminate foot-and-mouth disease.

Mr. Yohe is science editor of "Prairie Farmer," Chicago.

BRUCELLOSIS ERADICATION

Today, American livestock men and health officials are becoming more and more concerned with the eradication of brucellosis. The Scandinavian countries several years ago rolled up their sleeves and went to work to get rid of this disease, not just half-heartedly control its spread. With the exception of a few states like Michigan, Minnesota, and Wisconsin, we have nothing in brucellosis control programs that comes anywhere near approaching the effectiveness of the Scandinavian programs.

At the head of the list stands Norway. In 1935, there were 3,000 infected herds in Norway. Last year, they did not have a single reactor. Five years ago, Finland had 4,000 herds infected with brucellosis. Last year, less than 100 herds had reactors. It represented one reactor to every 8,000 head.

In 1938, Sweden started an intensive campaign to get rid of the disease. About 50 to 70 per cent of the larger herds in the country were infected. The program, incidentally, carried out the recommendations of the leading research veterinarians in America.

Today, Sweden has about 370,000 dairy herds. Only 1,200 of them have brucellosis reactors. This figures out to be a little less than 0.4 per cent, or one herd out of every 250. Sweden hopes to have the disease completely eradicated in three or four more years.

Fifteen years ago, 20 per cent of the herds in Denmark had infected animals. In some districts, as many as 40 per cent of the dairy herds showed reactors on blood tests. The Danes have made slower progress than the other Scandinavian countries, but they still have reduced to 6 per cent the herds with reactors. In sharp contrast, about one herd out of every five in America (20%) have brucellosis reactors. About 1 animal in every 25 has brucellosis.

There are no secrets in the methods these countries are using to get rid of brucellosis. With the exception of the ring test for milk, they use the same weapons that we

have known about for years. True, they are not faced with the problem of beef cattle (they have only dairy cattle), but their success still depends on the strong determination of these countries to get rid of the disease once and for all.

Since 1948, Finland has slaughtered all brucellosis reactors. In acute cases, abortion storms, the entire herd may be destroyed. They have used no vaccination since 1946. It is compulsory for farmers to test their herds when an abortion occurs on the farm. Ring tests on milk are run at all the dairy plants. In case of ring test reaction, the animals in the herd are given blood tests. Norway has about the same regulations. They do not vaccinate either.

Sweden requires slaughter of reactors only in clean areas. But cattle can not move from infected areas to clean areas. Infected cows must not be sold except for slaughter or into infected herds. Ring tests are made on all milk coming into the dairy plants to spot infected herds. This is followed up by blood tests of the individual animals in the herd if reaction is found on the ring test. Strain 19 vaccine can be used, on permission, but actually very little vaccine is used in Sweden.

Denmark, too, uses the ring test three times a year on all dairy herds. Reactors may be removed all at once or gradually, depending on the number. Once 90 per cent of the herds supplying a dairy are clean, then the other 10 per cent of the farmers must clean up their herds. Vaccination is used in Denmark, but only on permission from livestock health officials. Normally, permission to use vaccine is not granted except in herds that have had abortions, or if 20 per cent or more of the animals have positive brucellosis blood tests.

If a farmer keeps reactors in Denmark, he must keep them isolated. The law even requires him to keep the reacting animals at least 3 yards from his neighbors' land. If he pastures next to his neighbors' land, he must put up an additional fence 3 yards from the boundary fence. Dairies pay less for milk from infected herds. All these countries for many years have required that all skim milk or whey returned to the farm be pasteurized.

OTHER DISEASE CONTROL MEASURES

There is no hog cholera in any of the Scandinavian countries. Outbreaks have occurred. The last in Norway was in 1930. Sweden had a few outbreaks during the war. Both were quickly eradicated by disposing of the animals and quarantining the area.

About a year ago in America, we had many widely scattered outbreaks of anthrax, particularly throughout the Middlewest. It was thought to have been brought into the country in imported bone meal. Left to their own, without national guidance, each state moved independently to stop the spread. But by then much of the damage had been done. And many, many new farms and new areas were seeded down with anthrax spores capable of living for twenty or thirty years in the soil.

Since Scandinavia must import much of its feedstuffs from other countries, it, too, is in constant danger of introducing anthrax. A few outbreaks occur each year. But with this difference. These countries are prepared to stop the disease in its tracks and prevent the seeding down of anthrax spores in new areas.

How many times have you read in the papers of children being bitten by mad dogs? Far too many times! But you don't read about it in Scandinavian papers, for there is no rabies in these countries.

Dogs must be held in quarantine before they come into the country. While it has angered many movie stars, rich old ladies, and even a few ambassadors who insist on traveling with their pets, it has kept Scandinavia free of the scourge. Last year, Finland had 27 dogs along the Russian border come down with rabies. It was thought to have been brought across the border by strays. The animals were disposed of and the disease stopped by compulsory vaccination of all dogs in the eastern section of the country.

It would seem that in most parts of America we prefer not to have compulsory vaccination of all dogs. We would rather wait until the children are bitten and then vaccinate the children.

Every year in America we have cases of trichinosis in human beings. It comes from eating infected pork that is either raw or improperly cooked. We have tried to keep it under control by requiring pork to be frozen and encouraging housewives and restaurants to cook pork properly before serving it. Scandinavia has tackled the problem from the other end. They require

official inspection of the meat and compulsory cooking of garbage fed to hogs.

Today, we Americans have been greatly concerned with the possibility of foot-and-mouth disease outbreaks. We are all aware of the effective campaign waged against the disease in Mexico and, more recently, during the outbreak in Canada. On previous occasions, we too, have eliminated the disease from our own country.

Southern and central Europe are hotbeds of infection. With infection running high in bordering countries, it is not easy for the northern countries of Europe to control foot-and-mouth disease. About every three years the disease builds up in intensity in Europe. And it is then that outbreaks are apt to occur in Scandinavia.

Finland has just had a new outbreak of foot-and-mouth disease. It is being wiped out by slaughtering infected herds and stopping the movement of livestock in a zone around the infection—a method similar to that used in the United States in the past and more recently in Canada. By similar methods, Norway got rid of its last outbreak a little more than a year ago.

When the disease starts building up in Germany, Sweden vaccinates the cattle in its southern province of Skaane. When single outbreaks occur, the infected herds are destroyed and an almost military control of livestock movement is enforced in the area. If the disease becomes widespread, they use a combination of vaccination and slaughter of infected animals, similar to the program used in Mexico.

Denmark, with a common border with Germany and many of its islands only a few miles from the continent, stands in constant danger of the disease by reinfection. She tries to keep the disease down by controlled vaccination. While vaccination has lessened the severity of the disease, it can not be said that Denmark has eradicated foot-and-mouth disease.

Why have these countries been more successful than we in keeping infectious diseases down? It is true that they have some advantage over us. Much of their livestock is kept in small herds and flocks. Few farms have the large number of cows, hogs, and poultry that you find on many American farms. Frequently, but not always, the farms may be scattered and farther apart. This is particularly true in some parts of Norway and Finland. But on the other hand, in Denmark and even parts of Sweden and Norway, you will find just as great a concentration of livestock as we have in areas like Wisconsin and New York.

These countries do not have the great movement of livestock that we have in this country. Few animals go from one farm to another. And when they do, it is generally only to another farm a short distance away. These countries do not have anything that corresponds to our sales barns or large terminal markets like Chicago, St. Paul, Omaha, and Denver. Nor do they move livestock over long distances from one area to another as we do with feeder cattle, sheep, dairy cattle, and feeder pigs. Even the slaughtering is done in small, scattered packing plants rather than in great terminal centers.

But while this may have made the job easier, it is not the whole story. The same conditions exist in parts of central Europe where disease runs rampant through the herds and flocks. And these northern countries have the disadvantage of a constant source of infection in nearby countries, some of which join their borders. Frequently in the north woods and in the mountains, the young stock run on common grazing grounds in the summer so that the cattle from many farms are mingled together.

Reasons for Success in Disease Control

I think there is an important reason why Scandinavia has blazed the trail far ahead of us in disease control. When a new disease, like vesicular exanthema in hogs, comes along, the Scandinavian countries immediately jump on it. "Let's get rid of it," is their battle cry. We, in America, are more apt to sit back and say, "Oh well, they'll find a cure or a new vaccine for it." And it is true that our scientists have led the world in the development of vaccines and effective medications.

But the tragedy is that a cure is only good after the animal has taken the disease. And, as we should have learned in recent experience with hog cholera vaccines, even the best of them is seldom, if ever, 100 per cent sure. The disease continues to be a constant threat and constant cost year after year. The Scandinavians are more apt to look on these things as extra tools to exterminate the cause. We look on them as a means of living with the disease.

In Scandinavia, at times the job of disease control is done with surprisingly few personnel. There are only 300 veterinarians in all of Finland, only 67 district veterinarians directly responsible for disease control work.

Disease control laws differ in each of the four Scandinavian countries. Their greatest advantage over American laws is that they provide better central control and coördination. And most of the countries provide greater freedom in moving against an outbreak of any new disease not spelled out on the statute books.

But of even greater importance than the laws is the coöperation between farmers, dairy and meat-packing plants, and disease control officials. Since most of the dairy and meat-packing plants are coöperatives owned by the farmers themselves, they have led the way in encouraging disease control programs.

Much of the burden for disease control is placed on the dairies and packing plants. All animals to be slaughtered must be inspected by an official veterinarian and any disease reported at once to the disease control officials. Under the Scandinavian slaughtering system, each animal is marked, so the disease can easily be traced back to the farm from where it came. This is one great weapon that disease control officials in Scandinavia have that our people do not. One of the quickest places to spot a disease outbreak is in the slaughter plant.

The Scandinavian extension workers, along with the dairy and meat-packing plants and farm organizations, have banded together to educate themselves, as well as the livestock producers, of the dangers and control of contagious diseases. Compulsion has been of secondary importance. In Sweden, even the local agricultural societies that direct local extension work have their own extension veterinarians.

Scandinavia has indeed done an outstanding job of disease control work. We could well copy their example and really make America the healthiest place to raise livestock.

"When Congress Passes a Law"

Under this heading, the U. S. Chamber of Commerce, in one of its publications, points out that members of Congress do not always know how and why their legislative acts will affect their consituents unless they hear from them. It is stated that members of Congress welcome views from their constituents and that there is a right way to write effectively to them.

Because of the interest which veterinarians have in national legislation, both as professional men and citizens, and, particularly, in legislation which will be considered in the current session of Congress, we are reproducing below the suggestions of the Chamber of Commerce for communicating effectively with your U. S. senators and representatives.

DO

—spell your congressman's name correctly.
—make sure whether he is a senator or a representative.
—state concisely what you think and why—the briefer, the better.
—be sure of your facts.
—cite specific illustrations, whenever possible, as to effects proposed legislation would have on your business and your workers.
—write on your business stationery.
—sign your name plainly. Type it under the signature.
—send a letter rather than a telegram when time permits.
—seize every opportunity to become personally acquainted with your congressman.

DON'T

—threaten political reprisals.
—write in a captious or belligerent mood.
—remind your congressman of broken promises.
—attempt to speak for anybody but yourself.
—insert newspaper clippings or mimeograph material.
—send a chain letter or postcard.
—quote from form letters.
—write only when you want a favor. Letters of commendation are always welcome.
—try to make an errand boy out of your congressman.
—become a chronic letter writer.

Following are accepted headings and salutations:

The Honorable John Doe
United States Senate
Senate Office Building
Washington 25, D. C.

Dear Senator Doe:

The Honorable Richard Roe, Chairman
Committee on _____
House of Representatives
House Office Building
Washington 25, D. C.

Dear Congressman Roe:

Self-Retaining Medullary Extension Splint

SALO JONAS, D.V.M., and ALBERT M. JONAS
New Haven, Connecticut

THIS PAPER introduces a self-retaining intramedullary extension splint* for reduction of fractures of the long bones. One end of the splint is inserted into the longer fragment of the fractured bone and is provided with a telescoping pin which is projected or extended into the shorter fragment where it automatically adjusts itself to the length of the medullary canal, holding the bone fragments in alignment.

When the usual intramedullary pin is employed to repair a fracture of a bone such as the femur, the surgeon must make an incision over the hip joint and drill through the cortex at the trochanteric fossa. The pin is then introduced from the outside into the proximal fragment of the bone, and only when there is good alignment can it be manipulated into the distal fragment. However, when there is much over-riding, which is common, or wide separation of both fragments, besides introducing the pin through the first operative area over the hip, the surgeon must also resort to open reduction over the fractured area to bring the two ends into apposition and complete the insertion of the pin, a technique involving a second operative area. In old fractures where there are adhesions or interposed tissue between fragments, the necessity of surgical interference through open reduction is obvious and the repair can never be accomplished through the hip incision alone. Even when a double-pointed pin is used (*see* JOURNAL, July, 1949:9-12) the repair is made through open reduction over the fractured bone and the pin must penetrate through the cortex of the femur and the skin above the trochanteric fossa before it can be re-inserted into the distal fragment. Although the area around the hip is properly prepared for aseptic technique, the fact that the pin passes through the skin or muscles before entering the distal fragment, causes additional trauma and increases the possibility of infection.

The new splint consists of three separate pieces made of nonmagnetic surgical stainless steel:

1) Sleeve or hollow tube.
2) Spring which fits into sleeve.
3) Pin.

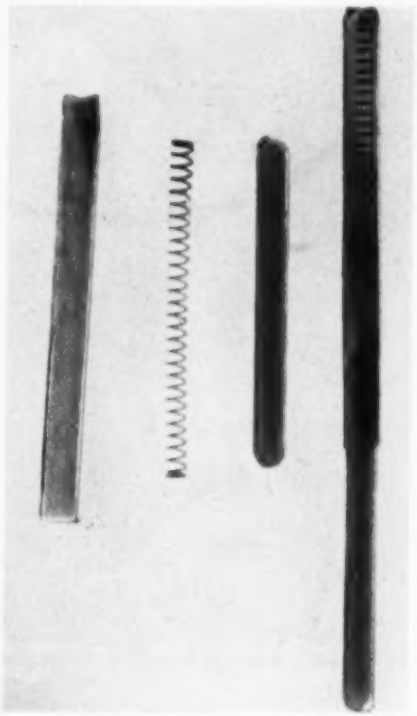

Fig. 1—The sleeve, spring, pin, and assembled extension splint.

*This self-retaining medullary extension splint was worked out jointly between the co-authors, Dr. Salo Jonas, practitioner in New Haven, Conn., and Albert M. Jonas, third-year student at the Ontario Veterinary College, Guelph, Ont. The patent is pending.

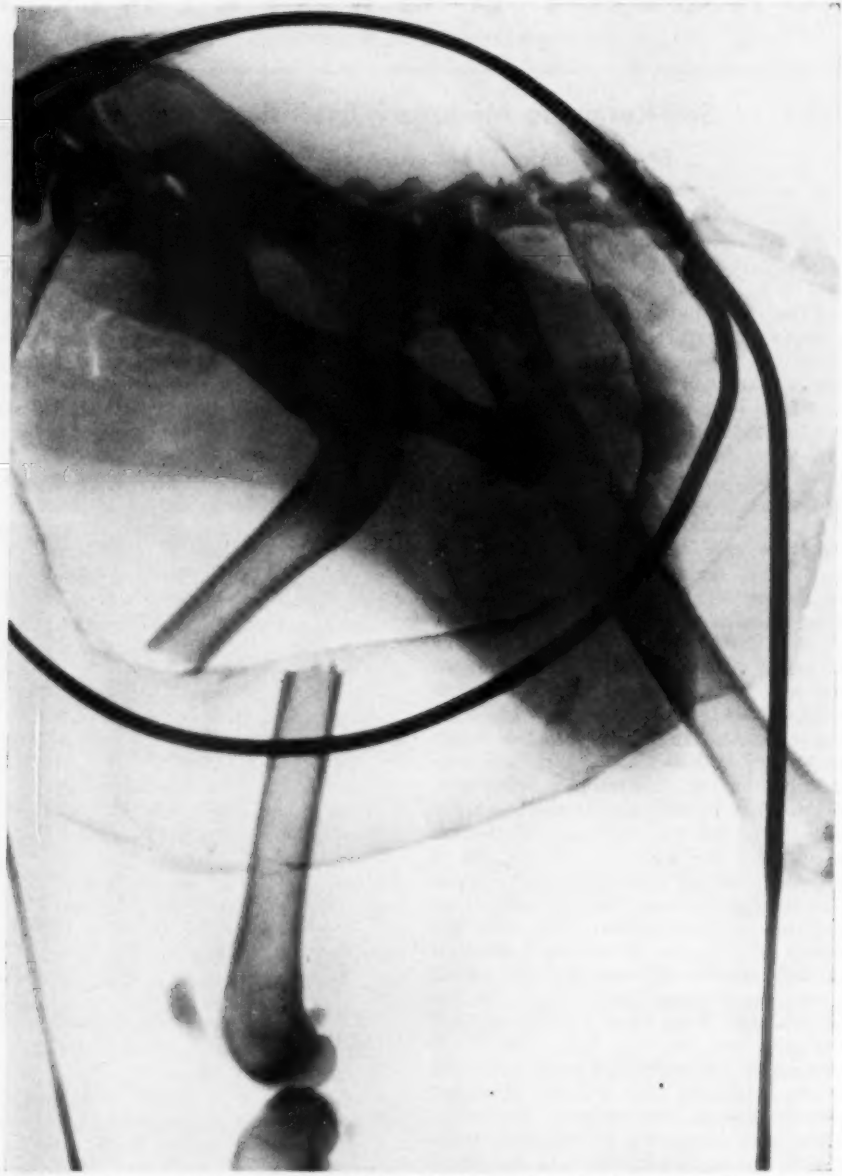

Fig. 2— A transverse fracture at the midshaft of the femur of a cat. Note ring of Thomas splint and 1-in. separation of fragments.

The sleeve is cylindrical, hollow, of various diameters and lengths, with one end open to make possible the insertion of spring and pin. The other end is pinched transversely at right angles so as to block the exit of the spring, but a small opening is left in the center to allow for free circulation.

The spring is of various lengths and tensions, depending upon the type of fracture.

The pin is disposed telescopically within the sleeve, being of the same shape in cross section as the sleeve, and fitting snugly therein. The outer end of the pin is provided with a relatively sharp point. The inner end is provided with a blunt flat surface against which the compression spring reacts, this spring being positioned within the sleeve and bearing at its other end against the abutment formed in the sleeve.

The length of the sleeve or tube conforms to the length of the medullary cavity in the longer fragment, and the length of the pin is governed by the length of the medullary cavity of the shorter fragment, plus the difference between the length of spring and sleeve. The spring is about half an inch shorter than the sleeve in order to leave room for the pin when the tension of the compressed spring is released.

Case 1.—A 2-year-old cat was referred to this office carrying a Thomas splint on a leg that had been fractured twelve days previously.

Figure 2 shows the transverse fracture at the midshaft of the femur, with 1-in. separation between the fragments. After studying the radiograph, the appropriate sleeve, spring, and pin were selected to make a complete unit to fit the length of both fragments of the femur. The cat was given sodium pentobarbital for general anesthesia and the operative area prepared for aseptic technique. An incision about 2½ in. long was made over the fractured femur slightly anterior and parallel to the line between the trochanter major and lateral epicondyle of the femur, cutting through the skin, tensor fascia latae, and separating the vastus lateralis from biceps femoris by blunt dissection.

Inasmuch as this was an old fracture and the fragments were solidly embedded in muscle tissue which was traumatized and undergoing calcification, difficulty was encountered in bringing the fragments closer to the incision for approximation and insertion of the splint unit. This was finally accomplished by using a hook under the bone and applying traction on the leg. During this process, a bone fragment about ¾ in. long chipped off the already weakened bone and was left in place during reduction (fig. 3). The sleeve with the spring inside was then inserted into the medullary canal of the distal fragment. The pin was inserted into the sleeve and held in place with a concave instrument applying steady pressure against the spring. When the shorter fragment was brought in apposition, the pressure on the pin was released and the spring automatically pushed the pin into the canal of the proximal fragment. (We are working on a spring catch and

Fig. 3—The pin only partially telescoped into the opposing fragment due to poor alignment.

release for those who prefer an assembled unit).

Figure 3 shows only partial penetration into the canal of the proximal fragment because of poor alignment. However, under fluoroscopy, this was remedied by slight manipulation as can be seen in figure 4.

Figure 4 shows reduction of the femur with complete unit of self-retaining extension splint in place in the medullary canal, with sleeve, spring in sleeve, and telescoped pin touching the cancellous part of the bone.

After inserting the splint unit, the area was infiltrated with 50,000 units of crystalline penicillin solution, and the incision closed with two deep silkworm sutures through skin and muscle, and two silkworm sutures through the skin only. A small drain was inserted at the distal end, which was removed the next day. One superficial and one deep suture was removed on the fifth day and the others on the seventh day. The cat was given 300,000 units of penicillin crystalline procaine in aqueous suspension twice daily for two days, followed with the same dose once daily for five days. The cat started to use the leg one day after the operation and walked quite well; it had developed a good callous which could be felt when it was discharged eleven days later.

Case 2.—A mixed smooth-haired Fox Terrier, 2 years old, with jagged transverse fracture of the distal end of the tibia with over-riding, was presented. Preparation of the patient was similar to case 1. The incision was made over the fractured segment of the bone and the extension unit inserted without difficulty. The dog did not use the

Fig. 4—The sleeve, spring, and pin of the self-retaining intramedullary splint unit in place, with pin telescoped into full length of the medullary canal.

Fig. 5—The unit in place. Note sleeve inserted into shorter fragment, therefore pin is only partially extending into longer fragment.

leg the next day after the operation, and a Thomas splint was used for support and extension of the leg. Following removal of the Thomas splint on the eighth day, the dog put weight on the leg and a good callous could be felt. Figure 5 shows the unit in the medullary canal. Note that this time the sleeve was inserted in the shorter fragment instead of the longer fragment as described in case 1. Therefore, as the pin must of necessity be shorter than the sleeve to allow space for the spring, it was obviously not of sufficient length to penetrate to the full length of the longer fragment and enable a solid immobilization without additional support. This demonstrates the importance of selecting a sleeve to fit the canal of the longer fragment, so that the pin will be of sufficient length to penetrate to the cancellous part of the opposing fragment when the spring is released.

SUMMARY

The advantage of this self-retaining medullary extension splint is that it makes possible the reduction of the fracture through one operative area, and once both fragments are approximated through open reduction and the proper splint inserted, the pin automatically telescopes itself into the full length of the medullary canal when the spring is released; it retains this position by the strength of the tension of the spring, without having to be anchored or secured with wires or other suture material to the outside of the bone.

Progesterone for Prolapse of the Vagina

Preparturient prolapse of the vagina, common in cows and ewes, may be due to excessive estrogen stimulation. They apparently have occurred after the use of diethylstilbestrol implants. Progesterone has been recommended for other conditions due to excessive estrogen, such as cystic ovaries in the cow and false pregnancy in the bitch; therefore, a clinical research study on preparturient prolapse cases, using repositol progesterone in various doses was conducted. Twelve veterinarians in seven states coöperated. The repositol preparation was injected intramuscularly to produce an implant. One ewe, 3 sows, and 90 cows or heifers were treated. The dosage in some cases apparently was too small but when 200 mg., or more, of progesterone was used, 83 per cent of 63 bovine cases responded satisfactorily. If, in twenty-four to forty-eight hours, straining had not ceased the dosage was repeated. In general, the shorter the duration of the prolapse the quicker the response and the smaller the dose required. For mild cases with no straining, hormone therapy alone was sufficient. For severe cases, the routine consisted of: epidural anesthesia; cleansing and reduction of the prolapse; retention suturing the vulva; and injection of repositol progesterone. The suggested dosage is 1 mg. per 5 lb. of body weight in mild cases, and 1 mg. per 2 lb. for severe cases.—*California Vet., Jan., 1953.*

Immunity of the Newborn

A British physician reports on the comparative antibody content of the mother blood and the naval cord blood of the newborn child. Most of the work previously reported on antibody differences concerned diphtherial and staphylococcic antibodies. In this study a Streptococcus was used. Of 46 cases studied, the antistreptolysin titer in the infant blood was at least twice that of the maternal blood in 33 cases. Of the others it was about the same in 3 and lower in only 1 case.—*Brit., M. J., Jan. 3, 1953.*

Statistics on Litters

A study of 2,476 German Shepherd litters reveals that the larger the litters, the smaller the percentage of male pups and the shorter the gestation period. The average period for 3-pup litters was 62.37 days; for 12 or more pups, 60.77 days. Dams 18 to 36 months old whelp the largest litters, an average of about 8. Younger dams average 7 pups while dams 8 years or older average 4.5 pups per litter. By months, the smallest litter average was in April, the largest in August.—*Dog World, March, 1953.*

Ratio of Sexes.—Records of the Bureau of Animal Husbandry show that in birds where there is little control, 103 males are produced to each 100 females. In dogs where selections are carefully made the proportion is about the same, 105 males to 100 females.—*Dog World, March, 1953.*

The *Trichomonas Foetus*-Infected Bull in Artificial Insemination

DAVID E. BARTLETT, D.V.M., Ph.D.; KENNETH MOIST, V.M.D.; FRANCIS A. SPURRELL, D.V.M.

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THE NATURE of bovine venereal trichomoniasis as it occurs under conditions of natural breeding has been previously described.[2,6,7]

Artificial insemination has long been recognized as a valuable adjuvant in combating trichomoniasis in infected herds, since this practice provides a means of breeding females while they are still potentially infected without endangering a previously uninfected sire. On the other hand, it has been recognized that transmission does occur when infected bulls are employed as sources of semen in artificial insemination operations. In such a manner, a most powerful aid in eradicating this disease is also capable of widely disseminating it.

In 1948, from Belgium,[14] it was first reported that transmission of trichomoniasis had been demonstrated to occur when trichomonad-infected bulls were employed in bull studs.

In 1952, from England,[13] the probability was reported of a cow's having become infected and aborting following insemination with semen from a bull found subsequently to be infected at an artificial insemination center. By cultural methods, these authors demonstrated trichomonads in seven of 28 ejaculates collected by means of an artificial vagina from infected bulls. These workers also demonstrated that when trichomonads were added, experimentally, to semen which was then diluted with egg yolk buffer containing streptomycin, trichomonads could be recovered by culture techniques from the stored, extended semen for two to five days. These authors concluded: "Storage of the infected semen under the usual conditions of temperature, dilution, and pH apparently exerts little inhibitory effect upon the trichomonads."

It had been demonstrated earlier[4] that transmission occurred readily and regularly when semen collected by means of an artificial vagina from a trichomonad-infected bull was used undiluted immediately after collection.

Incidence of Infection in Stud Bulls Used for Artificial Insemination.—At the close of 1951, an opportunity was afforded to examine a large number of bulls located in the studs of five typical, well-managed, artificial insemination organizations. The combined results are shown in table 1.

TABLE 1—Results of Examinations of 168 Bulls for Trichomonas Foetus*

Breed	Bulls in all units (No.)	Bulls in infected units (No.)	Infected bulls (No.)
Holstein-Friesian	64	38	10
Guernsey	39	19	3
Jersey	17	11	5
Brown Swiss	16	8	4
Milking Shorthorn	17	6	1
Aberdeen Angus	12	12	2
Hereford	3	3	0
Totals	168	97	23

*Examinations of negative bulls usually conducted weekly for six weeks.

Of 168 bulls examined, 23 were found to be infected with bovine venereal trichomoniasis. Considering only the affected studs, 23 of 97 bulls were found infected, the infected bulls being approximately equally distributed. No breed preponderance was evident.

In light of the possibility of intra-stud transmission, the above experience is considered too limited to give a significant measure of the present scope of the problem of bovine venereal trichomoniasis in bull studs. Less complete knowledge exists concerning eight other studs; five definitely had no infected bulls, while three had infected bulls.

Evidence of Transmission to the Field.—Our perspective is far too limited to offer sound and complete comment upon the frequency of transmission of trichomoniasis to the field. However, a half dozen instances have come to our attention which leave no reasonable doubt that transmission occurred. On the basis of admittedly super-

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The conscientious technical assistance of Dr. R. Zemjanis in collecting and examining, and Mr. D. Nechay in examining, many of the preputial samples is gratefully acknowledged.

ficial observation, it appears that all bulls have not transmitted at the same rate and that the rate of transmission may usually have been less than 1 per cent. In the overall picture, the importance of the artificially infected female may be considered relatively minor. The seriousness lies in herd sires becoming infected at the time they service females artificially inseminated with infectious semen when these infected females subsequently return to heat.

As pointed out[3] and actually demonstrated,[11] *Trichomonas foetus* tolerates well the environmental changes incident to processing of semen. Refrigeration and storage, the usual buffered extender, and the usual antibiotics are not harmful to this organism. The effect of freezing has not been determined.

Problem of Diagnosis.—Diagnosis of bovine venereal trichomoniasis is dependent upon demonstration, with the aid of a microscope, of the specific organism, *T. foetus*, in genital secretions of affected cattle. In bulls, this is a time-consuming procedure necessitating correct technique meticulously carried out by an experienced operator. Even so, repeated sampling is essential, as it has been clearly established that trichomonads can not be demonstrated in every sample collected from known infected bulls.

In an earlier publication,[3] the pattern characteristic of known infected bulls subjected to weekly sampling with the preputial pipette technique was established (table 2). Since the data was of such a nature as to preclude statistical determination, it was decided, for purposes of the study reported herein, to consider a minimum of six negative weekly examinations essential before releasing the bull from further immediate consideration. The presence of infection in the 23 bulls was established in the order shown in table 3.

TABLE 2—Occurrence of Trichomonas Foetus in 800 Preputial Samples Collected Weekly from Known Trichomonad-Infected Bulls

Bull (No.)	Samples containing T. foetus: Positive samples : Total samples	Per cent
TYPICAL BULLS		
214**	49:57	85.96
207	168:199	84.92
208	93:116	80.17
208**	54:68	79.26
193	52:66	78.80
274	60:91	65.98
214	10:16	62.50
275	31:51	60.78
250	11:22	50.00
266	11:26	42.30
ATYPICAL BULLS		
218	8:41	19.50
261	4:47	8.51

**Second infection.

TABLE 3—Sample Number at Which First Positive Findings Occurred in 23 Infected Bulls

23 infected bulls	Diagnosis made at first sampling in 15 bulls.	
	Diagnosis made at second sampling in 6 bulls.	
	Diagnosis made at third sampling in 2 bulls.	
145 uninfected bulls	133 bulls negative at 6 weekly examinations.	
	12 bulls negative at 1 to 5 weekly examinations.	

It is considered that an ideal situation, within practical limits, was maintained during the conduct of this study. Preputial samples were carefully collected by experienced veterinarians, the samples were then taken immediately to the same laboratory, and were examined promptly and at length by operators that were thoroughly experienced. In the present study, had dependence been placed upon a single sample, 8 infected bulls (more than 1/3 of those infected) would not have been disclosed. Had dependence been placed upon two samples, 2 of the infected bulls would not have been discovered.

On the basis of the further experience reported herein, it is concluded that since (1) all preputial samples from known infected bulls are not necessarily positive (tables 1 and 3), (2) negative preputial samples from infected bulls may be expected to occur successively, and (3) lack of experience may be expected to lessen the efficiency of the diagnostic procedure, six negative preputial samples taken at weekly intervals should be considered as a minimal diagnostic routine under practical circumstances.

Technique for Conduct of Examination Procedures.—Two techniques of direct examination of bulls have been generally utilized in this country, one which involves swabbing the preputial cavity and another which involves picking up with a special pipette a small quantity of smegma from

the surface of the glans penis and immediately surrounding membranes. Both have been fully described previously.[3,6,9,12]

A few experiments have been conducted comparing sampling methods. Incidental to studying the nature of infection in bulls,[10] 18 samples were collected on alternate days by swab and pipette methods from a known infected bull. Nine samples collected by the swab method contained an average of only 6 per cent as many trichomonads as were contained in nine samples taken by the pipette method. In a publication appearing subsequent to presentation of this paper,[8] it was reported that 63 samples collected by the pipette method from known infected bulls averaged 20.6 thousand trichomonads per cubic centimeter, while 62 samples from the same bulls averaged 4.2 thousand trichomonads per cubic centimeter when collected by the swab method. The percentages of negative samples by each method varied insignificantly in this experiment. These workers also compared the pipette method with douching with 200 cc. of saline. The number of trichomonads recovered in the former method was 7.1 thousand per cubic centimeter as compared with 13.5 thousand per cubic centimeter by the latter method, with the percentage of negative samples by the pipette method being 34.4 per cent, and for the douche method, 18.5 per cent. These writers concluded that the pipette method was more efficacious than the swab method, but that under certain circumstances the douche method might be preferable.

In practical diagnosis, the number of trichomonads that can be obtained by a given sampling technique is of prime consideration, since it is the bulls with low trichomonad populations that constitute the hazard in accurate diagnosis. The usefulness of the douche technique in handling large numbers of samples is considered doubtful. Also, the probability of more frequent appearance of contaminant protozoa from the lower preputial cavity, which can confuse the inexperienced examiner, should be considered. It would seem that in the experiment conducted to compare the pipette and douche techniques, the former was at a disadvantage, considering the fact that the bull's prepuce was flushed on alternate days. It is apparent that the flushing did have a decreasing effect upon the trichomonad population, as the percentage of negatives in the first experiment, when the pipette method was alternated with the swab method, was 6.3 per cent; while, when the pipette method was alternated with the douche method, the percentage of negatives was 34.4 per cent.

The pipette* method is designed to pick up smegma from only that area which has been determined as harboring the greatest concentration of organisms in infected bulls and to avoid the areas which are more apt to contain contaminant protozoa, large motile bacteria, and deteriorating desquamated cells which complicate the laboratory procedure. With the bull properly restrained, the pipette with attached bulb is passed to the depth of the prepuce, and smegma is picked up from the glans and surrounding preputial membrane. No fluid is injected into the prepuce, as a flushing effect is undesirable. The small amount of smegma obtained is then rinsed into 7 cc. of 0.85 per cent saline in a flat-bottomed tube and permitted to settle at least thirty minutes. Using a pipette of small diameter, the surface of the settled preputial debris is skimmed, a slide is flooded with this material, and examination under 100 x of a microscope carefully conducted. Three such flooded slides should be examined before considering a given sample trichomonad-free.

A variety of culture techniques proposed for use in diagnosing trichomoniasis have been designed to simplify the technical problem of examination of preputial samples. These mediums usually incorporate antibiotics intended to control bacterial growth and permit increase in numbers of the protozoa. With the coöperation of Drs. H. Griffiths and J. Henry, veterinary parasitologists in the School of Veterinary Medicine, University of Minnesota, most of the preputial samples from infected bulls taken during the course of the study reported herein were inoculated into a suitable antibiotic-containing medium. Although growth was apparent in many instances, failures were so frequent as to preclude total dependence upon this technique.

Treatment of Infected Bulls.—Successful treatment of bulls in the United States is less than ten years old.[1,5] The present

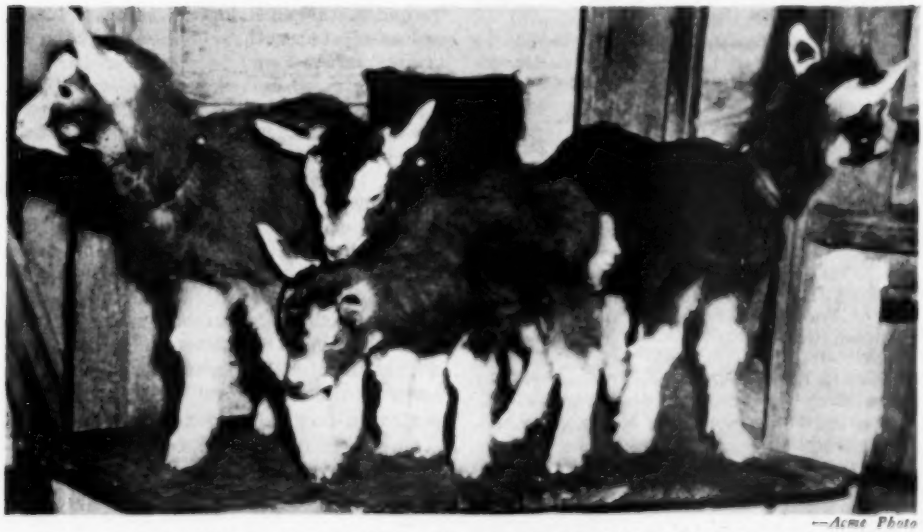
*Suitable plastic pipettes for preputial sampling are available from Plastics Inc., Chestnut and Ryan, St. Paul, Minn., and from Insemikit Co., Baraboo, Wis.

treatment of choice is one developed in Germany in the early days of World War II. In 1946, the first bulls in this country were treated successfully by the German method; since that time, of 34 bulls treated by one of us (D.E.B.), 30 have recovered. Post-treatment observations have been detailed and observations of most treated bulls continued to the present.

This treatment, fully described elsewhere,[5,6] involves application of a special combination of medicaments (bovoflavin salbe which is composed of a mixture of trypoflavine, surfen, and a special ointment base, P60, obtainable directly from I. G. Farben, Frankfurt (M), Hoechst, Germany, or in emergency from one of us, D.E.B.) applied to the genital membranes with the bull under the influence of regional anesthesia, either epidural or, preferably, pudendal,[12] permitting withdrawal of the penis. This material must be thoroughly massaged into the genital membranes of the glans penis and prepuce and, in addition, about 20 cc. of 0.1 per cent aqueous solution of trypoflavin is injected into the lower urethra. Each treatment consists of two applications, fourteen days apart. It is the meticulous and continued post-treatment observations extended over a period of four to six months which makes treatment of infected bulls a laborious and expensive undertaking.

The Problem of Bovine Venereal Trichomoniasis in Bull Stud Operation.—Of course, no certain conclusions can be drawn as to the exact manner of transmission of infection to the individual bulls involved in the present experience. There seems little doubt that a combination of factors, including both introduction of bulls infected previous to admission to the studs and inadvertent transmission at the stud of infection from these infected bulls to other bulls previously noninfected, has been responsible. The relative frequency of each will never be known.

There is no evidence in the present study or in earlier studies that transmission occurs by indirect contact through infected pens, bedding, barn equipment, or like manner. *Trichomonas foetus* is a fragile organism and does not tolerate conditions outside of the animal body. Rather, it would seem that the intra-stud transmissions occurred through infected jump cows, perhaps contact of infected membranes with the hands of the collector and immediate subsequent contact of the hands with the membranes of a susceptible bull, through lack of scrupulous care in washing or clipping the preputial tufts of bulls, or through



—Acme Photo

These quadruplet kids were born recently on a farm near Pontiac, Mich. Their mother, a twin, also gave birth to quadruplets in 1952 and, previously, had produced triplets.

intended cleansing douches preceding collection.

It seems as if adequate safeguards against existence of trichomoniasis in bull studs must, in recognition of the limitation of any single procedure, include a combination of methods embracing (1) study of the herd of origin of each new bull, (2) thorough examination of each bull on admission to the stud, and (3) repeated examination of all stud bulls while in service.

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A Patent Urachus and Umbilical Hernia in a Cow

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A Holstein-Friesian heifer calf, age 3 months, was presented in June, 1952, to the School of Veterinary Medicine at the University of Pennsylvania with an umbilical hernia. According to the history, the calf had been purchased two months previously at a dispersal sale. She seemed to be normal at the time and came from a good herd. After several weeks, the owner noticed a swelling around the navel. His veterinarian made a diagnosis of umbilical hernia and recommended that the calf be presented for surgical repair.

An examination revealed a reducible mass, 3 inches wide and 4 inches long, in the umbilical region. A caseous, purulent discharge was evident and the mass seemed to be thickened by extensive fibrous tissue deposits. On reduction, the hernial ring permitted the introduction of three fingers.

Due to the calf's stunted appearance, its general poor condition, and a temperature of 104 F., antibiotic therapy and local treatment of the umbilicus was instituted before resorting to surgery. Penicillin was administered daily, intramuscularly; and what appeared to be a fistulous tract was flushed with physiological saline solution and medicated with penicillin and streptomycin.

On the third day, it was discovered that a probe could be passed through the opening in the umbilicus for 8 to 10 inches in an upward and backward direction to approximately the region of the bladder. On the following day, the abdomen was noticed to be wet and to give off the odor of urine. Irrigation resulted in the passage of urine from the umbilical opening, which was collected in a test tube. A diagnosis of a patent urachus concurrent with an umbilical hernia was then made.

The literature reveals relatively few reports on this congenital defect, and no reports of a surgical approach could be found.

On the sixth day of hospitalization, surgery was decided upon. Regional anesthesia was induced with an epidural injec-

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tion of 6 cc. of a 2 per cent procaine solution and 2 per cent procaine infiltration of the operative field. However, due to the nature of the surgery, general anesthesia was resorted to by giving, intravenously, a combination of chloral hydrate, magnesium sulfate, and pentobarbital sodium.

An area on the ventral abdominal wall to the right of the midline was prepared in the usual manner for an aseptic approach. The incision, 10 inches long, began anterior to the hernia just off the midline. The hernial sac was isolated by an elliptical incision. On opening the abdominal cavity, the urachus was identified in a cordlike mass about 8 inches in length and 1 inch in diameter extending from the umbilicus to the bladder. The bladder appeared as a diverticulum of the urachus.

After completely freeing this mass from all surrounding tissues, the urachus was grasped with forceps, severed as close to the bladder as possible, and the stump inverted into the bladder with lembert sutures. The umbilical attachment of the mass was dissected entirely free so that fresh edges of the former hernial ring would be presented for closure. Due to many adhesions of the mesentery to the urachus, considerable ligation of vessels was required to control hemorrhage.

Since the heifer was young and undersized, a routine closure of the abdominal wall was considered sufficient. The parietal peritoneum, therefore, was closed with a continuous suture of No. 1 chromic catgut and the abdominal fascia with a continuous suture of No. 3 chromic catgut. The skin was closed with mattress sutures of No. 28 stainless steel wire, and a dressing of bipp* and a belly band were applied.

On the following morning, the temperature was normal for the first time since the animal was admitted to the clinic. Penicillin was given for six days and at no time was the temperature found above 103 F. The appetite remained good and normal urination was observed in twenty-four hours. The calf was sent home within ten days. Three months later, it was reported to be growing more rapidly and to have apparently made a complete recovery.

Summary.—A case of a combined patent urachus and umbilical hernia in a 3-month-old Holstein-Friesian heifer calf is reported. The surgical repair and after-care are described. Apparently, a complete recovery was obtained.

*Bismuth iodoform paraffin paste.

Diaphragmatic Hernia in Two Cows

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Case 1.—A common range cow of predominantly Jersey breeding was brought into the clinic for autopsy. The only history was that she had died suddenly from no apparent previous sickness.

On autopsy, when the skin was removed, a circular bruise about 14 inches in diameter was found on the right abdominal outer wall. The bruise did not extend through to the peritoneum. When the abdomen was opened, the reticulum was seen to be extending through a hole in the left ventral portion of the diaphragm into the thoracic cavity. The diaphragm was tightly adherent to the reticulum, but no inflammation was present.

The ribs were removed to expose the thoracic cavity, and the reticulum was found to be very hard, pressed tightly against the pericardial sac, and displacing the heart anteriorly. The pressure of the reticulum, which was found to contain a hard mass of sand, had formed a deep depression in the heart wall, giving the heart a curved shape.

Whether the bruise caused the hernia could not be decided since it was not deep, and the hernia seemed to be of long standing. No other lesions were found.

Case 2.—A 9-year-old Hereford cow, according to the owner, had not been doing well for several weeks. Her abdomen had gradually enlarged, then suddenly she showed definite signs of distress.

Because of her poor physical condition, she was not considered a good economic risk for rumenotomy. Therefore, a Dyson trachea tube was placed in the rumen. A large amount of dead moss and Bermuda grass was brought out through the tube with the fluid. The tentative diagnosis was impaction of the rumen and possibly the omasum also. After 8 or 10 gallons of fluid had drained from the greatly distended rumen, the cow was given a pound of rumide. The tube was allowed to remain in place so that the rumen could continue to drain as it regained tone. The next day,

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Fig. 1—Finger hooked in hernial ring after adhesions to reticulum were broken down. (1) Pericardial sac; (2) herniated reticulum covered with parietal pleura; (3) lung.

the cow was given a bottle of bovinoc and shortly afterward she started eating sparingly of hay and cotton seed cake. She was now nearly normal in size but the tube was allowed to remain in place as there was still no bowel passage. Two days later, a hard freeze caught her outside the barn and she died within twelve hours.

On autopsy, the mesentery ventral to the rumen was found adhered to the abdominal wall. A quart or so of thin, foul-smelling pus was contained in a pocket between the two structures. Exploring forward, the reticulum was found to be herniated into the thoracic cavity through a hole in the lower left portion of the diaphragm (fig. 1. and 2). The reticular wall was inflamed and tightly adherent to the ring. The pus was apparently due to this inflammation as no puncture or foreign body was found in the rumen or reticulum.

Fig. 2—Hernial opening in the diaphragm after the reticulum was removed.

Almost the entire reticulum was tightly adherent within the herniated sac. Apparently, as the inflammation had subsided and the adhesions contracted, the passage of fluid and digesta to the omasum and abomasum had been almost entirely shut off. The omasum was very small and completely empty. Thus she had become "paunchbound."

These cases are reported because this condition may be much more prevalent than the literature indicates.

Parasites Fatal to Nursing Ewes

Normally, sheep are much more resistant to parasites than are lambs but apparently nursing ewes lack this resistance. In central Washington in the fall of 1951, 40 ewes grazed mostly on the low marshy portion of an irrigated pasture. Twenty of the ewes died in April, 1952, due to heavy infestations with stomach worms, intestinal roundworms, nodular worms, and liver flukes.

On a northwest Iowa farm, one third of the ewes and one fourth of their lambs died as a result of severe parasitic disease. The 300 western ewes, purchased in the fall of 1950, were confined mostly to a grass pasture of 150 acres. They produced a 100 per cent lamb crop but by summer were emaciated and by early fall, 100 had died. They were heavily infested with lungworm, *Dictyocaulus filaria*, with the stomach worm, and with the hair intestinal worm, Trichostrongylus. Losses were reduced but did not stop when the ewes were removed from the lambs and treated with phenothiazine.—*Rep., Chief, B.A.I., 1952.*

Heredity and Production of Bees.—Several lines of honey bee progeny showed heritable differences, both in production and behavior. The most productive lines produced 2.5 times as much honey as the least productive.—*U.S.D.A., Dec., 1952.*

CLINICAL DATA

Anemia in Cattle Caused by Heavy Infestations of the Blood-Sucking Louse, *Haematopinus Eurysternus*

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LICE ARE the most common and widespread ectoparasites infesting range cattle in New Mexico. Over a period of several years, it has been observed by the writers that some individual cattle heavily infested with *Haematopinus eurysternus* showed clinical evidence of anemia. The anemia was manifested by pale mucous membranes, particularly the conjunctivae, a lack of color about the muzzle and, at times, even the udder. Heavily infested animals showed a lack of stamina when being driven long distances and during severe winter weather.

Although anemia associated with tick and flea infestations in animals has been reported by several authors, no such reports as a result of louse infestations have been found in our search of the literature. Nuttall *et al.*[5] quoted Lounsbury in reference to *Argas persicus* infestations on chickens, as follows: "The victims die entirely from loss of blood and inflammation produced by excessive parasitism." Theiler[7] reported a rapidly fatal anemia in a horse experimentally infested with *Boophilus decoloratus* (Koch). Fenstermacher and Jellison[1] found severe anemia in moose infested with the winter tick, *Dermacentor albipictus*. Anemia in sheep caused by *Ixodes ricinus* was observed by MacLeod[3]; anemia in sheep and jack rabbits infested with *Dermacentor andersoni* was reported by Philip, Jellison and Wilkins.[6] Anemia in foxes produced by infestations of the flea, *Ctenocephalides canis*, was studied by Law and Kennedy.[2] Jellison and Kohls[2] reported a series of experiments on rabbits artificially infested with *D. andersoni*. Their data indicated that 60 to 80 female ticks engorging at a normal rate may kill a rabbit in five to seven days. There was no suggestion of any condition other than exsanguination anemia. These authors observed a remarkable recovery when the ticks were removed or had become engorged.

The main purpose and scope of this paper is to report anemia in cattle heavily infested with the short-nosed cattle louse, *H. eurysternus*.

From the Zoological Division, Bureau of Animal Industry, Agricultural Research Administration, U.S. Department of Agriculture, Albuquerque, N. Mex.

MATERIAL AND METHODS

The animals involved in our observations were 3 Hereford cows and a bull obtained from different ranches in New Mexico. The animals were all adults, 5 to 10 years old, with histories of being constantly infested with *H. eurysternus*, and known to their owners as "louse breeders."

For the period of our observations, the cattle were kept on irrigated pastures throughout the grazing season and confined to corrals during the winter. When not grazing, they were fed a liberal ration of alfalfa hay and cottonseed pellets containing approximately 17 per cent protein. The louse population on each animal was allowed to increase without interference. When the lice had increased in sufficient numbers to reduce the red blood cell (r.b.c.) volume to 13 per cent or lower, they were destroyed by treating the animals with various insecticidal formulas. The quantities of insecticide used depended upon whether eradication or only partial destruction of the louse population was desired. For purposes of eradication, 5 to 15 gallons of spray were used. When partial destruction of the louse population was desired, only a part of the animal's body was treated. The insecticides were applied as low pressure sprays, using a barrel-type hand pump.

Animals 1 and 2 were put into the chute for thorough examination and withdrawal of blood samples at frequent, irregular intervals. Animals 3 and 4 were examined and bled at weekly intervals. Hematocrit determinations, which showed the r.b.c. volume, were made from blood samples obtained from the 4 animals. Additional determinations, including hemoglobin, red blood cell counts, white blood cell counts, and differential counts were made on blood samples obtained from animals 3 and 4. All hematocrit determinations were made in duplicate, the final determination being the average of the two readings. The hemoglobin determinations were made with a Spencer colorimeter giving the results in grams per 100 ml. The percentages of the different classes of white cells were determined by counting at least 200 cells from prepared blood smears.

RESULTS

Animal 1.—Observations on the effect of heavy louse infestations on the r.b.c. volume on animal 1, a female, were begun during the last week in March, 1946, when she was literally covered with lice. A total of 47 hematocrit tests were made on this animal during the period she was under observation. On April 8, when the first blood sample was withdrawn, the r.b.c. volume was 12.1 per cent. During the following month, no significant increase in the r.b.c. volume was recorded. On May 9, when the r.b.c. volume was 13.0 per cent, the lice were destroyed by spraying with 10 gallons of benzene hexachloride (BHC) emulsion containing 0.023 per cent *gamma* isomer. Thirteen days after spraying, the r.b.c. volume rose to 30.0 per cent and on the forty-second day it was 37.0 per cent, which is normal for cattle in New Mexico.

Sixty-nine days after spraying, a few scattered lice were found on the cow; 107 days later, the louse infestation had increased sufficiently to produce symptoms of anemia, which was confirmed by a hematocrit determination showing the r.b.c. volume to be 30.0 per cent. Thirty-eight days later, the animal had become so weak that it was necessary to destroy the lice for fear of losing the host. On this date, Dec. 9, 1946, the r.b.c. volume was 10.7 per cent. The lice were destroyed by spraying the cow with 10 gallons of an aqueous BHC suspension, 0.06 per cent *gamma* isomer. In eight days, the r.b.c. volume increased to 22.5 per cent, and on the thirty-ninth day after treatment it was 40.3 per cent.

The treatment applied on Dec. 9, 1946, failed to effect eradication, since on March 10, 1947, ninety-two days after treatment, a few scattered lice were again found on the cow. They increased rapidly during the following months, and by the first of August the animal appeared to be losing weight. On August 6, 149 days after the lice were found, the r.b.c. volume was 30.0 per cent; on September 10, it was 13.1 per cent; October 8, 14.5 per cent; and November 15, 9.25 per cent. During this period, the cow had a voracious appetite but was thin and weak and stumbled while walking.

Instead of destroying the lice, an attempt was made to improve the animal's condition by supplying all the alfalfa hay she could eat and supplementing the daily hay ration with 2 lb. of a cottonseed cake containing 17 per cent protein. During the period the cow was on the improved ration, the r.b.c. volumes were: December 12, 13.0 per cent; December 26, 12.0 per cent; Jan. 1, 1948, 11.0 per cent. During January, she suffered intensely from the cold, became weaker, stumbled while walking, and by the first of February she began losing her appetite. On February 5, the r.b.c. volume was 9.0 per cent, and the animal was too weak to withstand the cold and handling. The following day, February 6, the cow was sprayed with 15 gallons of 0.5 per cent chlordan emulsion. Within twenty-four hours she appeared brighter and had an improved appetite. On the fourth day after treatment, the r.b.c. volume was 13.0 per cent; on the seventh day it was 14.0 per cent; and on the forty-fourth day it was 40 per cent.

Since complete eradication of the lice was effected by the spraying with 0.5 per cent chlordan emulsion, the cow was artificially infested on June 17 with approximately 100 lice. On this date, the r.b.c. volume was 37.0 per cent. The louse population increased rapidly but with no ill effects until December 8, 174 days after artificial infestation, at which time the r.b.c. volume

TABLE I—The Blood Picture of 2 Infested and 2 Noninfested Cows, Compiled from Blood Samples Taken from Each Animal at Weekly Intervals

	Animal 3, infested (F) 27 blood samples		Animal 4, infested (M) 27 blood samples		Animal 5, normal (F) 31 blood samples		Animal 6, normal (F) 31 blood samples	
	Ave.	Range	Ave.	Range	Ave.	Range	Ave.	Range
Hematocrit %	23.5	10.0 —38.0	26.3	13.0 —34.5	37.0	32.0 —42.50	37.0	31.5 —41.0
Hemoglobin Gm./100 ml.	8.59	5.5 —14.5	9.02	4.5 —11.75	12.4	10.0 —14.50	12.30	10.5 —13.50
r.b.c. millions/cmm.	3.47	1.27— 6.34	4.70	2.29— 6.85	5.32	3.66— 6.48	5.98	5.01— 7.23
w.b.c.[1] thousands/cmm.	4.89	2.96—10.56	5.29	3.80— 7.40	7.16	4.64—10.72	9.46	7.72—12.16
Lymphocytes %	46.06	22.42—70.53	48.6	31.5 —62.66	61.72	45.0 —75.0	76.26	57.19—90.04
Neutrophils %	39.11	21.90—69.79	19.27	7.65—43.5	21.87	9.8 —34.15	14.54	3.66—32.06
Monocytes %	4.01	0.42— 9.0	5.49	1.05—11.76	4.76	0 —10.0	4.20	0.45— 9.80
Eosinophils %	7.26	0 —28.07	25.42	9.90—38.72	10.95	4.39—33.0	4.61	1.41—12.19
Basophils %	0.32	0 — 1.48	0.92	0 — 2.40	0.28	0 — 1.42	0.25	0 — 1.44

[1]White blood cells.

was 29.2 per cent. Approximately a month later (Jan. 10, 1949) the r.b.c. had decreased to 9.0 per cent. On this date, the animal was so weak she could scarcely walk. She was kept alive more than two weeks by giving her all the food she could eat, but she died during a severe blizzard on January 29.

Animal 2.—Animal 2, when brought from the range to the laboratory, was in poor physical condition and heavily infested with *H. eurysternus*. The r.b.c. volume was 15.0 per cent on Dec. 9, 1947, when the first blood sample was taken.

At the laboratory, she was confined to a corral and given a daily ration of 8 to 10 lb. of good alfalfa hay and 2 lb. of cottonseed cake containing 17 per cent protein. The lice increased continuously. However, the improved care and ration had an obvious beneficial result. During the following 117 days (from Dec. 9, 1947, to April 4, 1948), the r.b.c. volume ranged from 14.0 to 24.0 per cent, the average being 18.6 per cent. On April 5, the cow gave birth to a very small, weak calf. By April 20, when the r.b.c. volume had decreased to 11.2 per cent, the lice were destroyed by spraying with 15 gallons of 0.2 per cent heptachlor emulsion.

After the destruction of the lice, a remarkable recovery was observed. On the eighth day after spraying, the r.b.c. volume was 31.0 per cent, and on the twenty-seventh day it was 38.0 per cent. The cow remained fat and in good health until the seventieth day after destruction of the lice, when, through an accident, she died.

Animal 3.—Animal 3 had an extremely heavy infestation of lice when first observed. Her physical condition was poor, and she was so weak that she dragged her hind feet when walking. The pale mucous membranes, especially the conjunctivae, indicated severe anemia.

On Oct. 23, 1950, when the first blood sample was withdrawn the r.b.c. volume was 19.0 per cent; two weeks later it had decreased to 10.0 per cent. The animal was near complete exhaustion and appeared to be in a partial stupor for long periods of the day. At that time, November 6, the louse population was destroyed by spraying with 5 gallons of 0.5 per cent wettable chlordan suspension. This had an immediate beneficial effect and 6 weeks later the r.b.c. volume was 38.0 per cent, and the cow appeared to be normal in all respects.

Lice were found again three weeks after treatment (November 27) but had no effect on the r.b.c. volume until December 25, the seventh week after treatment. By April 23, 1951, the r.b.c. volume had again decreased to 13.0 per cent. At this time, the animal was so weak that she walked with a slow and unsteady gait and dragged her hind feet. She was then sprayed with 5 gallons of an 0.25 per cent wettable chlordan suspension, and in three weeks the r.b.c. volume increased to 25.5 per cent. This increase was recorded in spite of a serious injury sustained in the chute where she was bled, which immobilized her for two weeks and, finally, necessitated her destruction for humane reasons.

Animal 4.—Animal 4 was a 6-year-old grade Hereford bull acquired from a local feedlot. When the bull was brought to the laboratory, the louse population was extremely dense, covering the entire body except the back. The first blood sample, taken Oct. 25, 1950, showed an r.b.c. volume of 15.5 per cent. Shortly thereafter a decrease in the louse population was observed, which continued until the following March. The reduction in the number of lice was accompanied by an increase in the r.b.c. volume. From Oct. 25, 1950, until April 9, 1951, the r.b.c. volume increased from 15.5 to 35.5 per cent. However, the lice were observed to have increased during the last week in March, and the r.b.c. volume began to decrease after the first week in April. From April 9 to June 27, the r.b.c. volume decreased from 35.5 to 13.0 per cent.

The lice were partially destroyed by spraying only that part of the body anterior to the girth line. Two weeks later, the r.b.c. volume had increased to 24.5 per cent; a month later, it was 28.5 per cent, but the lice from the untreated area had spread to all parts of the body, and no further increase was recorded. The observations were discontinued because the animal had contracted psoroptic mange. The development of the mange lesions brought about a reduction in the louse population.

Table 1 shows the blood picture of animals 3 and 4 and of 2 louse-free controls, compiled from blood samples taken from each animal at weekly intervals.

A study of table 1 shows that the louse-infested animals had lower averages for r.b.c. volume, hemoglobin, red blood cells

and white blood cells, than the louse-free animals. However, in regard to the various classes of white blood cells, no consistent difference is noted between the infested animals and the louse-free animals. The lymphocytes were higher and the neutrophils lower in the louse-infested animals. The monocytes were about the same in both groups, and a somewhat higher average for basophils was found in the louse-infested animals. Animal 4 appears to have the only normal eosinophil count. No conclusion is drawn from the results of the differential leukocyte counts.

SUMMARY AND CONCLUSIONS

Four Hereford cattle, 3 cows and a bull, heavily infested with *Haematopinus eurysternus*, were studied to determine the effect the lice had on the normal red blood cell volume. Animal 1 was under observation for nearly thirty-four months, animals 2 and 3 for seven months, and animal 4 for nine and one-half months. Two animals were used as controls while animals 3 and 4 were under observation.

The results showed that extremely heavy infestations of *H. eurysternus* produced a severe anemia, at times reducing the r.b.c. volume to such an extent that it was necessary to destroy the lice to prevent the host from dying.

The remarkable recovery of the animals following the destruction of the lice further indicated that withdrawal of blood by the lice was the sole cause of the anemia. Following the first destruction of the lice on animal 1, the r.b.c. volume increased from 13.0 to 37.0 per cent in forty-two days. The second time it increased from 10.7 to 40.3 per cent in thirty-nine days, and the third time from 9.0 to 40.0 per cent in forty-four days. The destruction of the lice on animal 2 resulted in even more rapid recovery, requiring twenty-seven days to increase from 11.2 to 38.0 per cent. After destroying the lice on animal 3 the first time, the r.b.c. volume increased from 10.0 to 38.0 per cent in forty-two days. After destroying the second infestation, complete recovery was interrupted by the animal's death as a result of an accident. Nevertheless, in three weeks the r.b.c. volume increased from 13.0 to 25.5 per cent. The destruction of a part of the lice on animal 4 at a time when the r.b.c. volume was 13.0 per cent resulted in an increase to 24.5 per cent in two weeks.

There was also a reduction in hemoglobin, total red cells, and white cells. No consistent change in the percentage values for the various classes of white cells was observed.

Clinical evidence of anemia, as manifested by pale mucous membranes, was usually observed when the r.b.c. volume ranged between 24.0 and 30.0 per cent. The condition of the animals became critical when the r.b.c. volume decreased to 13.0 per cent or lower. The lowest r.b.c. volume recorded during these tests was 9.0 per cent.

Attempts to completely eradicate the lice by spraying failed, except in one instance in the case of animal 1. After this treatment, with 0.5 per cent chlordan, no lice were found on the animal for approximately four and one-half months. After being artificially reinfested with approximately 100 lice, an interval of 174 days elapsed before the r.b.c. volume was reduced from 37.0 to 29.2 per cent. Thirty-three days later, the r.b.c. volume was 9.0 per cent.

When the condition of the animals became critical, as a result of loss of blood, it could not be materially improved by additional feed and improved care. The only thing that improved the condition was the destruction of the lice.

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The Tallqvist chart and thermometer are indispensable in attempting to diagnose all baby pig diseases.—*W.A.A.*

Susceptibility of Animals to Louse Infection

Dr. H. E. Kemper, inspector in charge, Zoological Division, U.S. Bureau of Animal Industry, in reply to the JOURNAL'S request, gives his views as to why certain animals seem to be so much more susceptible to louse infestation than others in the same herd and environment.

Dr. Kemper says that they know of no completely satisfactory explanation of this phenomenon. They can only offer theories and hypotheses.

The same condition has been observed on other animals infested with other ectoparasites which spend their entire life cycle on the host. With psoroptic mange of sheep, the parasite rarely, if ever, attacks every member of the flock and the same is true in herds of cattle with various types of mange.

Several possibilities may be considered. The blood of certain individual hosts might be more to the parasites' liking than others. Skin texture, density of the coat, and surface body temperature may also be factors. Also, it is possible that the blood of the more susceptible may contain elements beneficial to the lice. The blood may be deficient in certain vitamins which may make it more desirable to the parasite. This has never been determined. The B vitamins and vitamin K are synthesized by microörganisms in the rumen of cattle. Should these microörganisms be depleted or absent, synthesis of these vitamins would not take place. Other elements in the blood resulting from improper metabolism may make it more desirable to the parasites.

Some cattle lose their lice during the summer while on green grass and frequently a marked reduction is noticed when heavily infested animals are brought from a poor range and fed liberal rations of good hay and commercial feed concentrates. Since some animals lose their lice completely while others continue to be heavily infested, it may indicate a faulty metabolism in the latter.

Observations on 3 calves born to particularly susceptible cows and raised to maturity indicate that inheritance of this peculiarity does not take place.

[If anyone has other definite or scientific evidence of why certain individuals are especially susceptible to ectoparasites, the JOURNAL would appreciate hearing from them.—ED.]

Feed Toxicity Similar to that Caused by Trichloroethylene-Extracted Soybean Oil Meal

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During the course of a series of investigations on trichloroethylene-extracted soybean toxicosis in cattle and sheep, 2 cases were submitted that were so similar in pathology that it appeared worth-while investigating them, although no soybean oil meal had been fed.

Case 1.—On April 17, 1952, Dr. T. A. Mott of Mobridge, S. Dak., submitted tissues from a cow and a sample of feed. The history indicated that the owner had about 70 cattle, mostly range animals but a few were being used for milk production. Both herds drank from the same water supply and were fed prairie hay from the same source; however, the milk cows were fed a ground mixture of corn and oats. Four milk cows had died without showing any particular symptoms. In all the cases, they appeared normal at night and were dead the next morning. There was no history of feeding sweet clover or soybean oil meal.

On postmortem examination, there was bleeding from the nostrils, slow clotting of the blood, and very slow development of rigor mortis. There were degenerative changes in the liver as indicated by a change in color from the normal mahogany to yellow. There was inflammation of the small intestine and ecchymotic hemorrhages on the kidneys.

The rumen content was negative for either cyanide or nitrates.

A few colonies of streptococci were obtained on culture.

A small amount of grain mixture was used for animal test. This was fed to a guinea pig from April 18 until April 26, at which time the sample had all been eaten. The guinea pig was fed the regular labora-

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tory ration from April 26 until May 9 when it was found dead. The postmortem examination on the guinea pig showed a large hemorrhage in the epicardium.

Case 2.—A dead cow and a fecal sample were submitted by Dr. R. C. Reed of Hillsboro, N. Dak., on April 19, 1952. The owner had 7 cows, 6 yearlings, and 5 young calves. These cows had been purchased the previous June. The cows had been fed a ration of prairie hay, alfalfa hay and ground screenings, salt, and a commercial mineral mixture. The yearlings were fed the same roughage and minerals but were not fed screenings. The animal submitted had been losing weight for about a month previous to her death but had not been treated. The postmortem examination showed hemorrhages on the colon. The kidneys were tough and of a lighter than normal color. The liver showed cloudy swellings.

Tests of the liver and kidneys for heavy metals were negative and cultures were negative. The fecal sample was negative for coccidia and heavy metals.

On April 21, the owner found another cow dead, although she had appeared well the previous day. The owner loaded the remaining 5 cows and the 6 calves and shipped them to market. Before reaching the market, a distance of some 50 miles, another cow had died. Both animals were brought to the laboratory for postmortem examination. Both of these animals showed intense icterus, with diffuse hemorrhages into nearly all of the organs. An attempt was made to make a differential leukocyte count on the last cow to die but the sample was not satisfactory. There were however many juvenile erythrocytes.

Tests for heavy metals and cultures were negative. Chicken embryo inoculation gave negative results for pathogens.

Some screenings were obtained and fed to guinea pigs starting on April 21, 1952. One guinea pig died on May 9 and the other on May 10. The first guinea pig, when examined postmortem, presented hemorrhages into the intestines and liver, with congestion of the heart; the second guinea pig had hemorrhages in the lungs, blood in the intestine, and hemorrhages on the testicles.

Discussion.—In both of these cases, lesions were observed that were similar to those observed in both field and experimentally produced cases of trichloroethylene-extracted soybean oil meal poisoning, yet in neither case was there a history of oil meal of any kind being fed. There was no indication that bracken fern was involved in either of these cases.

These observations suggest that the same factor which produced beans that became toxic when extracted with trichloroethylene may have produced the same or a similar toxicant in other plants. Poisonings from toxic soybean oil meal will probably not occur again since the trichloroethylene-extracted soybean oil meal has been removed from the market, but similar types of poisonings may be encountered from other feeds.

The toxic product in the mixture of corn and oats and the screenings appeared to be more toxic to guinea pigs than the one in the trichloroethylene-extracted soybean oil meal since the soybean meal does not produce hemorrhages in guinea pigs.

Cortisone for Mast Cell Tumors of Dogs

The effect of cortisone on a malignant multiple mast cell tumor in the dog was studied. The dog was given 100 mg. daily of cortisone for nine days. The tumors rapidly regressed and had completely disappeared microscopically by the ninth day. Microscopically there was evidene of destruction and disappearance of the neoplastic cells. The encouraging results warrant further investigation.—*Proc. Soc. Exptl. Biol. and Med., 1952.*

Cortisone Treatment of Ketosis

Cortisone acetate, 0.5 Gm. intramuscularly, was administered to 29 cows with ketosis, 24 of which had failed to respond to glucose therapy. The response was excellent in all 29 cows.

The case histories of 6 patients are given. In 1 case, a mature Holstein-Friesian was normal until the eighteenth day after calving. She then was off feed, gave less milk, and the Rothera urine test was strongly positive. After a single treatment of cortisone she was normal in forty-eight hours. Another case, a 5-year-old Jersey, was given 500 cc. of 50 per cent glucose intravenously, plus two 4-oz. doses of sodium proprionate the first day and 500 cc. of glucose the second day. When there was

no improvement on the third day, she was given one treatment of cortisone. The fourth day she was eating normally and had no relapse.

The most stubborn case was a 5-year-old Holstein-Friesian that had been affected with ketosis the previous year. She calved normally Jan. 3, 1951; on January 12 she refused food and the Rothera test was strongly positive. She was treated on twenty-nine of the following sixty days with four breaks of from five to seven days without treatment. On eighteen of the twenty-nine days she was treated from two to five times and almost every treatment included 500 cc. of 50 per cent glucose, a total of 52 bottles. In addition, calcium gluconate, glycerin, brewer's yeast, and vitamin B_{12} were also administered. On March 1, she was given 1 Gm. of cortisone with no other treatment. Two days later her appetite was normal, her milk production was increasing, and she had no further relapses.—*Canad. J. Comp. Med., Feb., 1953.*

Compulsory Rabies Vaccination

The editor of *Dog World* reports an increasing number of inquiries about the necessity and desirability of compulsory vaccination against rabies. He predicts that it will occur within the next ten years. A few states require vaccination before a dog can be licensed. He believes there would be little objection if vaccination would create a permanent immunity. The National Dog Welfare Guild offers a $1,000 award to whomever first makes available a life-long immunizing vaccine.—*Dog World, March, 1953.*

Complications from Vaccination Against Rabies in Man.—The New York City Health Department reports 46 cases of encephalomyelitis in 23 years following vaccination with Semple rabies vaccine. There were no deaths. In most instances, the paralytic symptoms appeared between the eighth and twenty-first day after the initial injection, with the latest on the forty-fifth day. The onset was usually sudden, with chills, fever, headache, vomiting, and mental disturbance; convulsions occurred at the onset in only 1 case and coma was not encountered. Recovery usually occurred in one to two weeks. The occurrence was about five times higher in those who received 14 injections than in those who received seven or fewer. The incidence of rabies from a bite was greater than the incidence of encephalomyelitis from vaccination. No treatment seemed to affect the course of the condition.—*J. Am. M.A., Jan. 7, 1953.*

Effective Rabies Eradication

Montana had its first rabies outbreak in many years during the first four months of 1951. Ten dogs and 2 cats developed the disease near Billings (*see* JOURNAL, July, 1952: 39). A well-coördinated quarantine and vaccination program soon checked the outbreak.

With rabies threatening the eastern border of the state, a campaign of dog vaccination and of extermination for stray animals, skunks, coyotes, and other wild animals and rodents in a 100-mile-wide belt was carried out. As of June 30, 1952, no more cases of rabies had been reported. —*Rep., Montana Livestock San. Board, June, 1952.*

Canine Rabies Vaccination.—Phenicated and phenolated vaccines are useful for the immunization of dogs, and avianized vaccine, administered intramuscularly, confers a solid immunity. It would be necessary to vaccinate 80 per cent of the canine population in order to control rabies by this means.—*First Inter-American Congress of Public Health, September, 1952.*

Rabies in Illinois.—In 1951, there were 189 positive rabies cases reported in Illinois. During this same year, Missouri had 508 positive cases. In 1952 there were 385 positive cases in Illinois, 210 of which were in St. Clair County across the river from St. Louis, where there had been many cases of rabies.—*Illinois Division of Livestock Industry, Jan. 23, 1953.*

Diagnosis of Rabies.—A Russian author reports that Negri bodies were absent from the hippocampus in 20 of 164 cases of rabies. In these 20 cases, they were present chiefly in the cerebellum in ruminants and omnivera and in the medulla oblongata in dogs with the paralytic type of rabies.—*Vet. Bull., Feb., 1953.*

Trichloroethylene Soybean Meal Poisoning in Sheep

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REPORTS OF cattle losses from feeding trichloroethylene soybean meal were published as early as 1916[1] in Scotland. The condition was later called "Duren disease" when is was observed in Germany in 1923.[2] More than 40 other reports of losses were made in Europe before this method of processing soybeans was discontinued. Pritchard *et al.*[3] gave an extensive bibliography on this disease; therefore, the complete list of references will not be given here. In 1951, Twiehaus and Leasure[4] reported on similar cattle losses in Kansas. Pritchard, Rehfeld, and Sautter[3] and Sautter, Rehfeld, and Pritchard[5] give reports on cattle losses in Minnesota. No reports of sheep losses have been made either in Europe or in the United States.

During the past two years, extensive investigations into cattle losses from trichloroethylene soybean meal yielded some evidence of sheep losses. The sheep affected were being fed toxic meal prior to and during lambing. Postmortem findings were characteristic of those observed in cattle. The difference in history, however, was significant in that losses were associated with a definite "trigger mechanism," such as lambing, pneumonia, or mechanical injury.

One large purebred sheep operator had heavy losses in Suffolk ewes and lambs and less severe losses in his Columbia sheep during the 1952 lambing season. His ewe loss was 17.7 per cent and lamb losses to Oct. 14, 1952, were 40.4 per cent. His ewe loss during the 1951 lambing season was 4.8 per cent and his lamb loss up to Dec. 1, 1951, was 11.7 per cent.

MATERIALS AND METHODS

The Suffolk flock was started on sheep pellets, containing 50 per cent trichloroethylene soybean meal, about Nov. 1, 1951, and the Columbia flock approximately seven weeks later. The flocks started lambing on Jan. 25, 1952, and the lambing season ended May 12. On March 12, the suspected pellets were taken out of the ration. Postmortem examinations on 34 adults and 66 lambs revealed characteristic lesions in 88 per cent of the sheep and 96 per cent of the lambs.

The symptoms in ewes were incoördination, depression, prolapse of the rectum and vagina just prior to lambing, and prolapse of the rectum and uterus after lambing. The temperature was near normal except in cases complicated by pneumonia or metritis. Some ewes remained prostrate a few days before dying.

The symptoms in lambs were depression, incoördination, and dehydration, with normal to slightly subnormal temperatures. Some lambs were strong at birth but died within a few days after starting to nurse. Other lambs were dead or died soon after birth.

The postmortem findings for ewes and lambs were petechial or ecchymotic hemorrhages in the omentum, peritoneal lining, mesentery, intestinal serosa, epicardium and, in nearly every case, on the aorta near the aortic arch.

A similarity of symptoms exists for poisoning in cattle by bracken fern and trichloroethylene soybean meal. The findings of Foggie[6] and Moon and Raofat[7] with regard to bracken fern poisoning in sheep led to speculation whether the nicotinamide treatment of McLauchlan[8] might not apply to sheep showing or developing similar symptoms and lesions from toxic soybean meal feeding. Even though the ewes were taken off of the suspected pellets on March 12, 1952, heavy ewe and lamb losses continued until the ewes were put on nicotinamide therapy.

Ewes that had just lambed and those yet to lamb were given 200 mg. of nicotinamide each day for one week. One ewe died within eight hours of the first treatment and another that had previously had a prolapse of the uterus also died. No other losses occurred until a few days after the treatment was discontinued. Vitamin therapy was then resumed until the sheep were placed on pasture. Unfortunately, the owner left no controls.

RESULTS

Thirty late-lambing, grade ewes were divided into three lots. The respective meal or pellet was added on April 11, 1952. All ewes received grass and alfalfa hay. Lot 1 received known toxic meal for seventy-eight days. The intent was to increase

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the supplement to an average of 2 lb. per ewe per day, but the lots receiving the known toxic meal refused to consume that high a level and went off feed. The average consumption per ewe in lot 1 was 1.17 lb. per day, with a high average in one day of 1.5 lb. The lambing and mortality record for lot 1 was: 10 ewes lambed 15 lambs (5 sets of twins); 4 ewes and 8 lambs died. One ewe died while lambing and another died following a uterine prolapse. Several ewes in lot 1 showed depression and incoördination without dying. Several lambs dropped were strong at birth and began to show incoördination following nursing. Other lambs were born dead.

Lot 2 received pellets similar to those that had been fed the purebred flocks. The ewes in lot 2 were on these pellets for seventy-eight days. Each ewe ate an average of 1.7 lb. of pellets (0.85 lb. soybean meal) per day, with a high single day average of 2.0 lb. Lambing and mortality figures for lot 2 were: 8 ewes lambed 12 lambs (4 sets of twins); 3 ewes and 3 lambs died. One of these ewes died on pasture after the feeding trial was ended, the cause of death was not determined. History, symptoms, and lesions similar to lot 1 were noted.

Lot 3 received expellor-type soybean meal for seventy-eight days. Each ewe consumed an average of 1.71 lb. per day with a high single day average of 2.0 lb. The lambing and mortality record for lot 3 was: 9 ewes lambed 11 lambs (2 sets of twins); 0 ewes and 2 lambs died. One of these 2 lambs was born dead the day the ewes were sheared and the other was killed by dogs on pasture. None of the ewes or lambs showed toxic symptoms.

Another lot of 10 late-lambing ewes (lot 4) was started on the same toxic meal as lot 1 on April 27. Lot 4, added to give information on white blood cell changes, consumed an average per ewe of 1.21 lb. per day for sixty-three days. The high single day average was 1.6 lb. The lambing and mortality data for lot 4 was: 8 ewes lambed 9 lambs (1 set of twins); 2 ewes and 8 lambs died. The symptoms, lesions, and history were similar to those noted in lots 1 and 2 except for 1 lamb killed by dogs on pasture.

The white blood cell totals and differential counts in lot 4 were not typical of those seen in affected cattle. However, normoblasts were observed, late in the study, in 3 of the 8 surviving ewes. Preliminary counts averaged 6,745 total white cells with a high of 9,650 and a low of 4,600 per cubic millimeter. The average of each weekly count stayed within this range. A high average of 8,405 was recorded at plus two weeks and a low average of 6,414 at plus fourteen weeks—four weeks after the soybean meal was removed from the ration. The high individual white cell count was 12,675 in ewe 49. Her preliminary total white cell count was 9,625 and her low was 4,725 two days after lambing. Ewe 49 did not die but her twin lambs died within two days following birth. The low individual white cell count was 3,625 in ewe 46, which had a preliminary count of 5,900. The low count was recorded two weeks after the ewe gave birth to a single lamb that died three days after birth. The ewe did not die.

Ewe 43 died sixty-six days after starting on toxic meal. She lambed three days after starting on the meal and her lamb was the only one dropped in lot 4 that did not die. The preliminary white cell count for ewe 43 was 9,200; her high was 11,000 at plus four weeks and her low was 6,975 at plus six weeks. The differential counts for ewe 43 were not diagnostic, staying within normal averages during the entire period.

Ewe 44 died forty-five days after beginning on soybean meal feeding. She was not pregnant but showed a moderate pneumonia; typical lesions of soybean meal toxicity were noted. The preliminary white cell count for ewe 44 was 7,850, her high was 11,875 at plus one week and her low was 7,200 at plus four weeks. The total white and differential counts were not diagnostic—even of pneumonia.

Total and differential white blood cell counts were made on lambs born alive, but no trends were noted.

CONCLUSIONS

1) Toxic trichloroethylene soybean meal produced sickness and death in ewes and lambs, with characteristic symptoms and lesions.

2) One lot of sheep pellets containing trichloroethylene soybean meal also produced characteristic sickness, symptoms, death, and lesions.

3) Expellor-type soybean meal produced no characteristic symptoms, lesions, or losses.

4) White blood cell studies yielded no changes characteristic of those seen in poisoned cattle.

5) A "trigger mechanism" was present when death losses occurred.

6) Nicotinamide may have a therapeutic action in trichloroethylene soybean meal toxicity. Further studies, when toxic meal is available, will be undertaken.

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The U.S.D.A. reports that two colonies of bees survived for six to seven weeks when placed in a deep freeze unit at a temperature of – 40 to – 50 F.

Verminous Pneumonia in a Cat

A 13-month-old female cat had been coughing and losing weight for about three months. Her temperature was 103 F. and râles were audible over both lungs. A fecal smear revealed many live larvae of Aelurostrongylus. She grew worse under penicillin therapy so was destroyed. Autopsy revealed all lobes of the lung grey and rather firm with scattered firmer nodules. Small air bubbles and hemorrhages were visible under the pleura. The latter contained coiled adult worms. Many live larvae and eggs escaped from the cut surface of the lung into the surrounding solution.

This parasite is rather widely scattered in the United States. Snails and slugs may serve as the intermediate host. This cat was often seen eating snails, slugs, and birds.—*Auburn Vet., Fall, 1952.*

Encephalitis in Swine in Relation to Hog Cholera

An attempt* was made to determine the correlation between encephalitis and exposure to hog cholera virus by the histopathological examination of 171 brains of swine of three groups: naturally diseased swine including hog cholera; swine injected with hog cholera virus six days prior to necropsy; and swine vaccinated by the serum-virus method between three and thirty-one days prior to necropsy.

Lesions of encephalitis were found in 34 of 38 swine naturally diseased with hog cholera and 17 of 62 swine naturally affected with diseases which were thought not to be hog cholera. The brain lesions were comparatively more severe and more widely disseminated in swine naturally infected with hog cholera than in other animals examined.

Encephalitic lesions were found in 28 of 52 swine injected with hog cholera virus six days prior to necropsy. The severity of microscopic lesions roughly paralleled the severity of gross lesions, and in most instances the microscopic lesions were widely disseminated in the brain.

In 4 of 12 swine vaccinated by the simultaneous method, brain lesions were found which were comparable in severity and distribution to lesions found in naturally occurring cases of hog cholera. These animals had been vaccinated three to thirty-one days before they were examined postmortem. None showed symptoms or gross lesions suggestive of hog cholera.

It appears that microscopic examination of the brain furnishes little additional information in cases where there are frank gross lesions of hog cholera. It is well to keep in mind, however, that encephalitis occurs frequently in hog cholera.

*This is an abstract of an article under the same title by R. K. Jones, D.V.M., and L. P. Doyle, D.V.M., Purdue University, Lafayette, Ind., which will be published in a forthcoming issue of the *American Journal of Veterinary Research*.

Control of Distemper in Mink

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APPROXIMATELY 2.5 million mink are raised each year in the United States. The important mink-raising areas are the North Central States, Northeast States, Denver and Salt Lake City areas, and the Pacific Northwest. Distemper is the most contagious and destructive disease of mink in the United States at the present time. The malady was first reported in this species from this country by Shaw[1] in 1932.

Outbreaks of distemper occur at all times of the year. However, the greatest incidence occurs during the summer months when the new kit crop triples the population of susceptible animals on the ranch. Furthermore, this added group of young animals is particularly susceptible to the virus.

In order to initiate a plan for control, the veterinarian must understand the operation of the physical plant of a commercial mink ranch. Familiarity with the general routine of operations through all seasons of the year is necessary to detect the means of introduction and rapid diffusion of the virus. Although the individual housing of mink limits the rapidity of spread of distemper in an outbreak, this advantage is minimized by the proximity incident to the rearing of as many as 2,000 mink on a single acre of ground.

PREVENTION OF OUTBREAKS

Two basic methods of disease control are recognized for preventing an outbreak of distemper in mink: (1) preventing contact of the virus with the susceptible population of mink, and (2) raising the resistance of mink by vaccination to provide protection against distemper in case of exposure.

It is apparent that prevention by eliminating the source of infection is the most economical and satisfactory way if it can be accomplished. Infected dogs are the most common means by which the virus gains entry into a susceptible mink herd. Foxes may also carry dog and mink strains of the distemper virus. During shipment in express cars and other public conveyances, dog and mink cages are often placed near each other for convenience in feeding and watering. Ready transmission of other diseases may, likewise, result between these species. In many cases, however, one can trace the source of virus to newly purchased or returned breeding stock. Live mink shows and exhibitions often provide an excellent opportunity for the spread of the virus. At such shows, it is not uncommon to assemble in a small area 700 to 800 mink from all parts of the United States and Canada.

There are, nevertheless, outbreaks on farms in which the source of distemper is not so apparent. Until the unknown means of spread of the virus are clarified, ranchers should exclude visitors and nonessential personnel from the yards. The possibility of arthropods, birds, and other vectors or carriers not known to be susceptible to distemper can not be excluded.

Although no one can deny that good management and an adequate ration are extremely important from the standpoint of many infectious diseases, distemper will spread through a healthy herd as rapidly as one that is neglected. In all instances, it is necessary for the rancher to practice rigid isolation for all sick animals and to establish suitable quarantine measures for all introductions regardless of their source. Field experience has indicated that adult mink may carry the virus while manifesting only slight clinical signs of the disease or none at all. All new or returned breeding stock should be quarantined in isolated pens for at least forty days. The purchase of breeder mink in late February or early March is often a hazardous procedure, since such introductions into the herd are often made with little if any quarantine period.

Two types of distemper vaccines, the inactivated "killed" virus and the modified living virus are in general use for vaccination of mink. Shaw[1] first proposed the use of an inactivated-tissue vaccine for the control of distemper in mink. This

From the Associated Fur Farms, Inc. (Hartsough), and the Department of Veterinary Science, University of Wisconsin, and Pathological Division, United States Bureau of Animal Industry (Gorham).

work was amplified by Pinkerton[2] in 1940. Vaccines of this type are prepared by harvesting tissues from infected mink or ferrets and inactivating the virus of the infected tissues by formalin, or ultra-violet irradiation. These products possess the inherent limitations of a killed virus vaccine. It has been our experience that in numerous instances vaccines containing inactivated virus did give sufficient protection to warrant their use on noninfected ranches. The immunity produced by this product is not long lasting; animals vaccinated during the winter are often susceptible by the following summer to field strains of the distemper virus.

Haig[3] first proposed the use of chicken embryo strains of the distemper virus as living virus vaccines. One of us (G.R.H.)[4] has used a vaccine of this type in approximately 60,000 mink on 42 ranches. At this writing, neither outbreaks following its use nor systemic reactions have been recognized. It would be desirable to challenge some of these vaccinated mink with a virulent virus in order to test their immunity under different environmental conditions. This procedure could be accomplished by removing mink from commercial ranches to laboratories for challenge.

As with killed vaccines, there are precautions and problems native to the use of living vaccines. In our experience so far, the strains used in commercial mink distemper vaccines have not caused severe systemic reactions nor have they activated latent or subclinical infection as has been experienced with the living virus vaccines directed against hog cholera and Newcastle disease. The few unfavorable reports that have come to our attention were those in which the distemper product was used by laymen. In these cases, it is likely that greatly weakened or dead virus was administered which resulted in a failure to stop outbreaks.

These favorable results do not preclude the possibility of future failures to provide satisfactory immunity through failure of the present commercial strains to immunize or of reversion to a more active state. Likewise, devitalization due to other disease or any cause may prevent a satisfactory immunity from developing.

Our present knowledge indicates that a single vaccination of the kit crop each summer is probably sufficient for ranchers who wish to initiate a vaccination program on an annual basis. If the kits are not vaccinated, the best time to vaccinate adult mink with the living virus vaccine is during January when pelting has been completed and the rancher has selected his breeders. There is no definitive evidence in mink, however, of how long a serviceable immunity lasts following vaccination, either under laboratory or field conditions. Whether the immunity conferred by the living vaccine is as durable as that following natural infection also remains to be determined on an adequate basis. Cabasso[5] has experimentally demonstrated resistance in ferrets eighteen months after vaccination. He challenged both the controls, which succumbed to the virus, and the vaccinated animals which were resistant to 1,000 m.l.d. challenge doses.

HANDLING OUTBREAKS

The most important factor for instituting control in an outbreak of distemper on a mink ranch is an early diagnosis. While the virus may not spread rapidly through a ranch, all too often a rancher has been lulled into a false sense of security by his own incorrect diagnosis, that of his neighbors, a feed salesman, or even in rare cases by his veterinarian.

Mink infected with distemper often present a picture which may resemble that of other mink diseases, but if one has an opportunity to see 2 or 3 infected individuals at different stages of the disease, the diagnosis usually is not difficult. In most cases, the initial signs of the malady will appear nine to fourteen days after exposure. The mink blinks its eyes more than usual, and they have a squinty, wet appearance. Next, the lids swell and frequently stick together with a purulent discharge. A discharge from the nostrils tends to dry and cake or crust around the nose and mouth. Often the nasal discharge is scanty and difficult to detect. These signs persist for about a week or more and are usually accompanied by a swelling of the foot pads. Later in the course of the disease yellow-brown granules may be seen on the swollen red surface of the pads. The mink may die following convulsions at this time.

Not infrequently, the appetite returns and the animal may appear to recover, with all the signs mentioned above subsiding. Such mink, however, may later die

of neurotropic distemper which the ranchers call "screaming fits." The incidence of neurotropic distemper in outbreaks varies considerably. Occasionally, the first manifestation of an outbreak will be this form of the disease, although nervous signs are usually observed later in the course of an outbreak.

The proportion of affected animals which succumb to neurotropic distemper has been observed to increase following vaccination in herds in which there is a large number of catarrhal cases. In the majority of outbreaks, there seems to be a direct relationship between the number of animals showing catarrhal signs and the ultimate proportion which develop nervous signs. Since, with the use of living vaccine, the number of catarrhal cases is fewer following vaccination, similarly the incidence of "screaming fits" or neurotropic distemper is reduced also. We have seen outbreaks in which the incidence of nervous signs was very high. This suggests that there may be strain differences in the infecting virus or, possibly, that there is an altered susceptibility of the host with a resultant alteration of the disease picture. On the basis of field evidence as criteria, we believe the described signs represent classical distemper virus infection uncomplicated by other viruses distinct from distemper.

Distemper can not be diagnosed by examining a carcass after it has been pelted. Microscopic examination, by which distemper inclusion bodies may be demonstrated, may be necessary to confirm a tentative or suspected clinical diagnosis. Smear preparations can be relied upon, however, only if typical distemper inclusions are found. In numerous cases smears appear negative, yet sections made from the same tissues are positive. Because of such irregularity from smear examinations, we make it a routine practice to section the urinary bladder and trachea of all suspected cases and to employ Pollak's trichrome stain.[6] Since distemper inclusion bodies, if few in number, have a patchy distribution, it is necessary to take two or three sections of each tissue at different levels of the block.

Wide usage of inactivated tissue vaccine throughout the mink-raising areas of the United States and Canada has shown that it is often difficult to produce an effective resistance rapidly enough in field outbreaks to stop the spread of distemper. Because of the poor results we have experienced with inactivated tissue vaccines on ranches where infection was present, and with the advent of the more effective live virus vaccines, we can no longer advise the use of inactivated vaccines in controlling outbreaks.

Shortly after the successful adaptation of the distemper virus to chicken embryos, a vacuum-dried, live virus vaccine was placed on the market. Cabasso[7] and coworkers reported use of this vaccine on four mink ranches when the virus was present at the time of vaccination. Further spread of the disease was prevented according to their report.

One of us (G.R.H.)[4] has used this vaccine on 23 ranches that had infected animals on their premises. A total of 35,000 mink was vaccinated on these ranches. The mortality due to distemper following inoculation did not exceed 3 per cent in any outbreak. These results are better than those which have been obtained in the past with the then available vaccines. The vaccination in each instance was done within two or three days after the definitive diagnosis was made. Infected animals were killed or removed from the herd on these ranches.

The rancher should not attempt to keep or treat infected mink. Not only is a continuing source of the virus maintained, but in the majority of cases the individual dies or remains permanently unprofitable. Canine distemper antiserum is not effective for controlling an outbreak. Field experience indicates that it may only lengthen the incubation period of the disease without lessening its injurious effects.

On ranches where an outbreak occurs, all pens, kennels, feeding and other equipment used by infected animals should be cleaned and disinfected with a 2 per cent lye solution (1 lb. lye to 5½ gal. of water). Dead animals should be removed from the ranch and burned. If the animal's pelt is prime, it should be pelted, fleshed, and dried away from the ranch and sent to auction as soon as possible. The storage of frozen pelts from infected carcasses may provide a source of virus for the kit crop of the following year. Fowl, sheep, or other animals should not be raised in mink yards for the duration of the outbreak, since these animals may possibly carry the virus mechanically.

Baker and co-workers[8] recently observed that ferrets which received the Onderstepoort strain of egg-adapted vaccine two or more days before a challenge of distemperoid (Green)[9] virus exhibited no signs of distemper. This observation indicates that this strain of egg-adapted virus may be capable of quickly inducing an "interference" effect[9] in mink. This observation coupled with the fact that mink are penned individually for most of the year, thereby limiting the spread of the virus by direct contact, may explain the relatively good control obtained with the use of living virus vaccines in controlling field outbreaks.

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Quaternaries Versus Hypochlorites

In mastitis sanitation procedures, solutions both of quaternary ammonia and hypochlorites are used when washing the udder and teats before milking, and when dipping the teat cups in solutions after milking each cow.

When tested, the two solutions were about equally effective but the quaternaries are preferred because the hypochlorites are more apt to cause chapping of the skin, both of the teats and the operator's hands; also warm solutions of hypochlorites cause much faster deterioration of rubber.—*Milk and Food Technol., Jan.-Feb., 1953.*

Neomycin Sulfate Treatment of *Salmonella Derby* Infection in Geese

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Geese are raised in the irrigated sections of New Mexico principally for weed control in cotton fields and along irrigation ditches. They require little feed and are considered to be susceptible to few diseases. Fenstermacher,[1] however, reports that geese are susceptible to fowl paratyphoid infections. A search of American literature reveals no other reference to cases of fowl paratyphoid infection in geese.

Procedure.—On June 10, 1952, 1 Toulouse gosling, 8 weeks of age, was presented to this laboratory for autopsy and diagnosis. The owner stated that its condition was typical of others in the flock. Of 125 goslings, 40 had died and 43 were showing signs of illness. They were the same age, from the same hatchery, and had been brooded in clean quarters on open land never used for domestic fowl. After the initial outbreak, they had been moved to clean quarters on irrigated land. Their ration consisted of a commercial chick starter (20% protein) and grass. The first sign of the disease usually was drooping and lateral twisting of both wings, with the primary flight feathers extended laterally. After three to five days of progressive weakness, they became "downers" or had "spraddles" and were able to move only slightly and then only with a swimming motion of the legs. A few were unable to retract their legs from a spraddled position. None lost the ability to hold their heads and necks erect or to eat and drink. These signs were the same as those of fowl paratyphoid in pigeons as described by Guss[2] but are in contrast to those described by Fenstermacher. Death occurred in most cases after ten to twenty days of illness.

At autopsy, the macroscopic changes were a slightly swollen and congested liver, edema of the tissues along the coronary

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The author is indebted to Miss Alice B. Moran of the Animal Pathology Division, Agricultural Experiment Station, University of Kentucky, Lexington, for the final identification of the organisms involved.

The neomycin sulfate used in this experiment was supplied by courtesy of the Upjohn Co., Kalamazoo, Mich.

groove of the heart, and a slightly elongated gall bladder. Bacteriologically, the liver, gall bladder, pericardial fluid, and coronary blood were negative. Specimens of the duodenal contents and the feces yielded Salmonella-type organisms. A tentative diagnosis of paratyphoid was given. Subcultures sent to a seriological laboratory were later identified as *Salmonella derby*.

The owner stated that sulfamethazine was used in the drinking water in 0.097 per cent concentration (1 oz. of 12½ per cent solution to 1 gal. of drinking water) with no apparent effect. On June 16, 1952, treatment with neomycin sulfate was begun. The treatment consisted of 0.05 Gm. of the drug solution *per os*, administered with a 1-cc. insulin syringe.

Eleven of the 43 ill goslings were not treated. Feces of 7 of the 11 were positive for an organism similar to those mentioned. Six of the 7 birds died and at autopsy 4 of them yielded the fowl paratyphoid organism. None of the 4 whose feces failed to yield the organism died, but only 1 recovered completely.

The 32 goslings which were treated improved but not to a marked degree; therefore, it was decided to repeat the treatment on June 27. Two died but were not submitted for autopsy. On July 22, 18 of the treated and 1 of the untreated goslings had completely recovered, while 12 of the treated and 4 of the untreated remained in a weak condition, with signs as described before.

The manufacturers of neomycin sulfate recommend that the drug not be given parenterally. Neomycin sulfate in dosage levels of 0.05 Gm. or less per gosling did not cause toxic manifestations when administered *per os*.

SUMMARY

1) An outbreak of disease in goslings 8 weeks of age causing leg weakness, a "spraddled" condition, and a high death rate is described.

2) An organism suspected of being a Salmonella of the fowl paratyphoid group was isolated from the intestines and later identified as *Salmonella derby*.

3) Sulfamethazine was apparently of no benefit so neomycin sulfate, *per os*, was tried. The death loss in the treated group was 6.25 per cent, while that of the untreated group was 54.54 per cent.

4) Treatment apparently increased recoveries sufficiently to warrant further study.

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Corynebacterium Pseudotuberculosis Infection in a Horse

Corynebacterium pseudotuberculosis occasionally causes a disease called ulcerative lymphangitis in the horse in Europe, but this is rare in the United States. This condition is usually characterized by ulceration along the lymph vessels of the legs, especially the hind legs. The regional lymph nodes usually become enlarged. This condition may be easily confused with glanders.

A mare of mixed breed, about 6 years old, was slaughtered at the Victory Packing Company, Los Angeles, Calif., on May 1, 1951, under BAI inspection. The mare did not show any skin lesions on antemortem inspection and was in good condition. On postmortem inspection, areas of caseation necrosis were found in all of the visceral lymph nodes of the body. In addition the lungs, liver, spleen, and kidneys were found to be extensively involved with areas of caseation necrosis. There were masses of caseation necrosis under the peritoneum surrounding the large intestine which, on the first examination, appeared to be some type of malignant tumor. There were also some caseo-necrotic lesions in the gluteal muscles. Samples of the infected lung, spleen, liver, kidney, and muscle were sent to the pathological laboratory of the U. S. Bureau of Animal Industry in Denver, and a diagnosis of ulcerative lymphangitis was made by microscopic examination of the lesions. Visceral lesions are rare in this disease. The carcass was condemned as unfit for food.—*Keith T. Maddy, D.V.M., Oakland Army Base, Oakland, Calif.*

When Moving, Please Advise the AVMA

Fescue Foot or Ergot-like Disease in Cattle in Kentucky

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In the October, 1952, JOURNAL (pp. 289-290), Dr. A. A. Goodman of Fort Collins, Colo., reported fescue foot in Colorado and New Zealand. His article stated that the toxic substance seemed to be in the tall or reed variety of fescue, termed "king," "giant," or "ditch bank" fescue. However, during the drought here in Kentucky in 1952, many farmers had trouble with cattle grazing on fescue 31. Most of the other grasses such as orchard grass and Ladino clover died out during the drought while fescue 31 survived. Fescue 31 does not grow as tall as the reed variety and is one of the species that is not supposed to cause trouble. In places where there have been mixed grasses for grazing, no trouble has been reported.

One farmer had 40 Hereford cattle all during the year of 1952 on fescue 31 pasture. Eight cows had symptoms of ergot poisoning. They were removed from the pasture and treated by the farmer with antiseptics. Two of the cows were sent to the Bourbon Stock Yards for slaughter. They were thin and emaciated. Symptoms of this condition were swelling of both hind legs, extending from the foot to the hock joint, and lameness. One cow had the end of her tail sloughed off. The hind feet on both cows were gangrenous and ready to slough. A well-defined line of demarcation was present. The forefeet were not affected. They had the same clinical picture and symptoms as those discussed by Dr. Goodman in his article.

It would seem that most of the fescue

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The photograph (figure 1) was supplied by the Soil Conservation Service.

Fig. 1—Close-up of fescue 31 in Kentucky.

species of grasses contain this toxic substance and under certain climatic conditions will cause trouble. It seems to be a matter of just waiting to see if the good qualities can offset the bad in this so-called wonder grass.

BHC Internally for Lice in Swine

Technical hexachlorcyclohexane (BHC), 30 mg. per kilogram of body weight, was mixed with the feed for hogs as a single dose. The preparation contained 10 per cent of the *gamma* isomer. Pigs, which had been heavily infested, were free of lice as early as twelve hours after the feeding. They were still free forty days later.

The only reactions shown by the treated pigs were a slightly increased thirst and a tendency to rest more. This method is more economical and some believe safer than when applied externally.—*Vet. Rec., Jan. 3, 1952.*

Toxicology of Insecticides

Research, to determine to what degree insecticides for external parasite control are stored in meat and milk of cattle, continues. Cattle sprayed 36 times with 0.5 per cent DDT at two-week intervals showed no ill effect. After a single spraying, fat samples from the animal showed a deposit of 11 to 18 parts per million of DDT in the fat. Two sprayings produced 31 p.p.m. and six sprayings 35 p.p.m. Analysis after one to six sprayings with 0.5 per cent methoxychlor showed only 2 p.p.m. fat contamination. Lindane did not produce detectable levels in the fat after six applications of 0.03 per cent solution.

Milk showed 7 p.p.m. of dieldrin after dairy cows were sprayed with a 0.5 per cent solution. Even at 0.05 per cent, dieldrin is so readily stored in fat that it should not be used in controlling livestock pests.

Insecticides were also mixed with the animals' feed. A diet including 100 p.p.m. of toxaphene or of benzene hexachloride produced no visible ill effects when fed for 112 days to cattle or sheep. Fat contamination at 112 days was: for toxaphene, 21 p.p.m. in sheep and 38 p.p.m. in cattle; for BHC, 117 p.p.m. in sheep and 250 p.p.m. in cattle. When aldrin or chlordan were fed at 10 p.p.m. in the diet for 112 days, no ill effects were observed but fat contamination for aldrin was 55 p.p.m. in sheep and 49 p.p.m. in cattle; and for chlordan only 9 p.p.m. in sheep and 11 p.p.m. in cattle. However, when methoxychlor was fed at 10 p.p.m. in the diet for thirty days, no accumulation could be detected in the fat.

Toxicity was evidenced by reduced gains when dieldrin or aldrin or chlordan were fed 25 p.p.m. for fifty-six days to sheep or cattle. The average fat contamination for both species, then, was 78 p.p.m. for aldrin; 72 p.p.m. for dieldrin; and 16 p.p.m. for chlordan. Chlordan disappeared from the fat two months after feeding was discontinued, but aldrin and dieldrin did not disappear for nine months.—*U. S. Bureau of Entomol. and Plant Quarantine, 1952.*

Toxicity of Insecticides on Hay

Alfalfa hays containing residues from spraying with chlordan and toxaphene were fed to dairy cows for two years; milk samples were analyzed every ten days. Measurable amounts of the insecticides were not found in the milk but they were found when the same materials were given in larger quantities mixed with feed or in capsule. When lindane, a refined extract of benzene hexachloride, was similarly sprayed, the residue on the hay was too low to be effective. When larger amounts *of lindane* were given in capsule or mixed with the feed, *benzene hexachloride* was detected in the milk. Likewise, methoxychlor when sprayed on hay was not detected in the milk but it was detected when larger doses were given.—*U.S.D.A., 1952.*

Rotenone Best for Cattle Grubs.—Several hundred insecticides were tried for the control of cattle grubs but none equalled rotenone. Whereas sprays delivering 400 lb. of pressure were formerly recommended, it was learned that 200 lb. pressure would do a satisfactory job.—*U.S.D.A.*

Antibiotics in Human Food.—The Food and Drug Administration recently ruled that direct or indirect addition of antibiotics to food for human consumption constitutes a public health hazard. It may cause sensitization of the consumer to the antibiotics and may result in the emergence of strains of pathogenic microörganisms resistant to these drugs.

The Treatment of Anaplasmosis in Louisiana with Aureomycin and Terramycin

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FOLLOWING THE demonstration of Anaplasma-inhibitory properties by aureomycin and terramycin,[1] it was decided to test their value in the treatment of clinical cases of anaplasmosis. Plans were made to conduct this test on a significant number of adult, susceptible animals under close laboratory observation. The lack of adequate funds made this impractical and, subsequently, a program was developed with the coöperation of sixteen Louisiana practitioners. It was realized that such a program would not provide all the information desired, but at the same time it was hoped that it would enable us to collect information on the stage of the disease at which cases were presented for treatment in Louisiana and on the value of antibiotic treatment of clinical cases. A satisfactory treatment for anaplasmosis should include agents which will act on both the Anaplasma and the anemia. These antibiotics do not fulfill the latter requirement; still it was hoped that their effect would be sufficient to improve the chances of recovery.

ORGANIZATION OF FIELD WORK

Each coöperating veterinarian was supplied with citrated blood vials, slides for smears, insulated shipping boxes with ice containers, and a history sheet on which to give the identification, age, breed, condition of animal, duration and severity of symptoms, temperature, prognosis, and treatment given. Samples were sent to the laboratory by express as soon as possible. The practitioner was asked to obtain a second sample two days later if this was at all possible.

The practitioners were requested to treat every second case with the antibiotics supplied. The alternate cases were to be treated with their regular treatments in lieu of untreated controls. The recommended dosages of aureomycin and terramycin were 2.5 and 1.0 Gm., respectively, administered intravenously, for an animal under 1,000 lb. This dosage was arbitrarily doubled for heavier animals.

DATA

A total of 132 animals were treated in this program. Sixty were treated with aureomycin, 52 with terramycin, and 20 received nonspecific* treatment only. The small number in the latter group limits its usefulness as a control group selected at random.

DISCUSSION

The most significant observation of this investigation was the acute stage of anemia at which most cases were presented for treatment. Many of these animals had a history of being sick for three or four days and most had a subnormal temperature, with marked icterus, emaciation, and recumbency. In a report by Smith and Howell[2] on anaplasmosis in Oklahoma, only 14 per cent of the animals treated had less than 30 per cent of their normal hemoglobin level. They regarded this as the critical blood level below which the fatalities rose significantly. Our limited observations have borne out this statement. In the group of animals examined in this state, 72 per cent had below the one-third level of their normal hemoglobin at the time of treatment. The normal 100 per cent value of hemoglobin is assumed to be approximately 12.0 Gm. per 100 cc. of blood. In Louisiana, we are apparently dealing with anaplasmosis which has progressed much further than that reported in Oklahoma. The anaplasmosis problem in Louisiana at the present time would appear to be one of anemia; that is, the result of the infection rather than the acute infection itself. This would require that a contemplated treatment combat the anemia rapidly and effectively in contrast to a specific therapy against the Anaplasma itself.

It should be pointed out that those animals which were treated early in the clinical

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Sincere appreciation is expressed to the sixteen veterinary practitioners who coöperated on this field program.

Appreciation is expressed to Lederle Laboratories, Division of American Cyanamid Company, for supplying aureomycin, and to Charles Pfizer Company, for supplying terramycin used in these experiments.

*"Nonspecific treatment" is used to designate all of those treatments which were given to improve the animals' appetite and strength. This designation includes sodium caccodylate, aricyl, strychnine sulfate, calcium gluconate, etc.

stages of the disease had a high recovery rate. Satisfactory results were obtained in those herds in which several animals were affected and where treatment was instituted at the first sign of sickness. The apparent value of aureomycin and terramycin at this early stage of the disease will have to be substantiated by further work. These antibiotics may be of real value for the treatment of this disease in areas where a large proportion of the cases are treated early.

It must be emphasized that these observations are limited to Louisiana. It is quite possible that, due to local conditions, the type of clinical anaplasmosis seen in this state is materially different from that in other parts of the country, such as in the range states. In Louisiana, most cases of anaplasmosis are sporadic in nature and hence the owner is dealing with one sick animal and the tendency is not to institute treatment and supportive care until hope of unassisted recovery has passed. This seriously complicates the veterinarian's problem in the handling of these cases.

TABLE 1—Data on Cases Treated with Aureomycin

Case (No.)	Millions r.b.c./ cmm.	Packed cell vol. (%)	Hemoglobin Gm./ 100 cc.	Infected r.b.c. (%)	Results
1	1.32	9	2.43	20.5	Rec.
2	1.14	8	2.09	54.2	Died
3	1.56	14	5.31	5.0	Rec.
4	1.49	14	5.59	3.8	Rec.
5	0.97	8	3.96	16.2	Rec.
6	0.80	8	2.56	1.2	Rec.
7	1.05	11	3.70	1.0	Rec.
8	1.53	9	2.94	26.0	Rec.
9	1.58	9	2.44	28.4	Died
10	1.49	12	4.09	17.2	Rec.
11	1.84	11	2.88	40.0	Rec.
12	1.57	11	3.38	15.4	Rec.
13	1.17	8	2.94	39.2	Rec.
14	1.11	9	3.64	18.2	Died
15	1.65	12	4.22	13.6	Rec.
16	1.16	11	3.38	18.2	Rec.
17	1.02	11	2.56	21.4	Died
18	1.22	11	3.44	27.2	Died
19	1.30	9	1.92	24.4	Died
20	1.02	9	2.75	21.2	Died
21	0.97	8	3.00	12.8	Rec.
22	0.77	5	1.66	4.4	Rec.
23	0.81	8	2.36	2.0	Rec.
24	0.80	8	3.00	2.2	Rec.
25	1.56	10	3.32	11.4	Rec.
26	1.95	14	4.81	11.8	Rec.
27	2.04	10	3.84	25.4	Rec.
28	2.46	23	6.57	18.8	Rec.
29	1.43	9	3.25	11.0	Rec.
30	1.03	11	3.51	7.4	Rec.
31	1.70	9	3.64	17.2	Rec.
32	1.72	9	3.25	20.0	Rec.
33	1.23	7	2.34	21.2	Rec.
34	2.45	16	5.01	42.2	Rec.
35	2.36	15	4.36	41.0	Rec.
36	1.72	12	3.90	1.0	Rec.
37	1.56	10	3.25	61.4	Rec.
38	1.49	10	3.38	47.0	Rec.
39	1.60	10	3.44	46.4	Rec.
40	1.92	12	4.92	13.0	Rec.
41	0.98	9	2.56	5.4	Rec.
42	1.40	12	3.32	2.2	Rec.
43	1.29	9	3.20	33.6	Rec.
44	1.49	12	3.70	12.2	Rec.
45	1.39	12	4.16	13.6	Rec.
46	1.63	12	3.84	28.4	Rec.
47	1.10	7	2.11	28.2	Died
48	2.40	19	5.46	15.0	Rec.
49	3.13	23	6.04	17.6	Rec.
50	3.53	32	6.69	29.6	Rec.
51	1.22	10	2.33	78.2	Died
52	1.19	13	2.81	14.0	Rec.
53	1.26	11	2.68	16.8	Died
54	1.03	7	1.82	26.6	Rec.
55	1.03	7	1.89	24.0	Rec.
56	1.46	8	2.68	20.0	Rec.
57	1.21	8	3.38	17.0	Rec.
58	1.36	16	3.38	1.0	Rec.
59	1.21	9	2.21	17.6	Rec.
60	1.45	13	3.38	19.6	Died

TABLE 2—Data on Cases Treated with Terramycin

Case (No.)	Millions r.b.c./ cmm.	Packed cell vol. (%)	Hemoglobin Gm./ 100 cc.	Infected r.b.c. (%)	Results
61	1.12	12	2.73	12.8	Rec.
62	0.97	7	2.08	2.0	Died
63	1.17	8	3.65	22.0	Died
64	1.17	10	2.47	5.6	Rec.
65	1.29	8	2.08	41.8	Died
66	1.63	10	3.9	10.0	Rec.
67	1.25	15	3.71	1.0	Rec.
68	1.84	11	4.23	57.2	Died
69	1.33	9	3.25	48.4	Rec.
70	1.97	13	5.27	47.2	Died
71	1.26	10	2.88	9.2	Rec.
72	1.72	12	4.25	17.0	Rec.
73	2.53	25	7.10	2.9	Rec.
74	1.37	9	2.49	14.2	Rec.
75	1.41	13	4.42	22.8	Rec.
76	1.43	9	3.51	57.0	Died
77	1.61	11	3.85	32.4	Rec.
78	1.56	10	4.00	29.6	Rec.
79	1.75	8	3.84	1.0	Rec.
80	1.24	10	3.01	5.2	Rec.
81	0.97	8	2.18	7.8	Died
82	1.00	7	2.17	13.6	Rec.
83	1.43	15	6.01	1.0	Rec.
84	1.01	9	1.66	14.8	Rec.
85	1.79	13	5.44	7.0	Rec.
86	0.82	10	2.24	3.6	Rec.
87	1.64	13	4.74	13.4	Rec.
88	1.14	9	3.38	12.8	Rec.
89	0.95	8	2.56	17.4	Rec.
90	1.27	9	3.34	5.8	Rec.
91	1.09	8	2.75	19.2	Rec.
92	1.19	12	4.35	2.6	Rec.
93	0.59	6	2.88	16.3	Died
94	1.29	12	3.57	3.4	Rec.
95	1.53	14	4.16	60.6	Rec.
96	2.07	12	4.16	32.0	Died
97	1.48	8	3.57	32.0	Rec.
98	1.00	8	3.01	8.8	Rec.
99	2.47	17	6.76	18.6	Rec.
100	1.88	12	4.74	17.6	Rec.
101	3.18	24	8.00	13.0	Rec.
102	1.12	9	3.64	19.4	Rec.
103	1.02	8	2.24	24.0	Rec.
104	2.23	22	5.85	11.6	Rec.
105	1.03	8	3.00	45.0	Died
106	1.74	11	4.16	18.6	Rec.
107	1.70	11	4.16	42.8	Rec.
108	1.23	7	1.69	20.4	Rec.
109	1.85	15	4.62	1.0	Rec.
110	1.80	11	4.23	36.6	Rec.
111	1.81	11	4.10	25.0	Rec.
112	0.78	8	1.95	8.2	Rec.

Although the value of these antibiotics in the treatment of anaplasmosis is dependent upon the early diagnosis and treatment, the authors would like to stress the limitations associated with this. If these antibiotics are given before the inclusion bodies have appeared in at least 1 per cent of the red blood cells, then the net result is a prolongation of the incubation period.[3,4] This fact makes it impossible to treat indiscriminately all animals involved in a threatened epizoötic. Only those animals which have more than 1 per cent of infected cells, as determined by laboratory examination of stained smear, can be treated. If this limitation is not recognized, these antibiotics which appear to be of some assistance will be seriously abused and their potential or real value jeopardized. For further details on this type of prophylactic treatment, the reader is referred to an earlier publication.[1]

TABLE 3—Data on Cases Receiving Nonspecific Treatment

Case (No.)	Millions r.b.c./ cmm.	Packed cell vol. (%)	Hemoglobin Gm./ 100 cc.	Infected r.b.c. (%)	Results
113	1.46	9	2.93	22.4	Died
114	2.50	16	6.83	31.2	Died
115	1.21	10	3.51	11.6	Died
116	1.23	11	3.26	2.6	Rec.
117	1.14	9	3.38	12.8	Rec.
118	0.77	12	2.30	1.6	Rec.
119	1.16	12	3.57	1.0	Rec.
120	1.02	8	2.88	11.6	Died
121	0.95	7	2.04	24.9	Died
122	1.09	9	2.56	2.6	Died
123	2.60	12	4.09	9.0	Died
124	0.77	5	1.66	4.4	Rec.
125	1.68	12	4.16	22.6	Rec.
126	1.50	8	2.47	21.2	Rec.
127	1.45	10	3.21	18.0	Died
128	1.22	9	3.11	8.0	Rec.
129	1.19	8	2.00	1.0	Rec.
130	1.36	11	2.51	22.0	Died
131	1.05	8	2.03	4.2	Died
132	1.31	9	2.24	3.0	Rec.

TABLE 4—Summary of Results

	Aureomycin	Terramycin	Nonspecific treatment
No. of cases	60	52	20
Percentage of cases which had over 4.0 Gm. of Hb. at time of treatment*	21.6%	41.5%	15.0%
RECOVERY RATES			
Over-all	81.8%	80.7%	50.0%
Recovery rate for those animals which had over 4.0 Gm. of Hb. at time of treatment	100.0%	85.8%	33.3%
Recovery rate for those animals which had below 4.0 Gm. of Hb. at time of treatment	76.5%	74.4%	52.9%

*Of all cases treated, 72 per cent had below 4.0 Gm. of hemoglobin per 100 cc. of blood.

SUMMARY

1) Most of the clinical cases of anaplasmosis in Louisiana have passed the peak Anaplasma period, and the Anaplasma are declining at the time of treatment. This stage of the disease is believed to be too late for the effective use of aureomycin and terramycin alone.

2) Those cases treated early in the clinical stages of this disease, as in herd outbreaks, show evidence that these antibiotics are of value. This will have to be substantiated by further work.

3) Treatment of anaplasmosis in Louisiana will have to be directed primarily to combating the severe anemia which has reached a critical stage in 72 per cent of the animals examined.

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Wild Cherry Bloat in Cattle

Dr. George H. Hart of Davis, Calif., suggests that, since roughage in the rumen tends to prevent bloating by stimulating rumen action, cattle apparently attempt to accomplish this for themselves. If turned into lush green pastures, they will eat some of it and then drift around the edge of the field as if looking for a coarse roughage. Bloats may not occur until such coarse material has been used up.

Dr. Hart thinks that this may account for the so-called "wild cherry bloat," which is actually hydrogen cyanide poisoning with rapid bloating after death. Such cases are frequently found in fields that have been cleared of wild cherries and converted into permanent pasture. The cattle drifting along the fence lines eat the wild cherry and soon die.—*Guernsey Breed. J., Feb. 15, 1953.*

Observations on the Epizootiology of Cutaneous Papillomatosis (Warts) of Cattle

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PAPILLOMATOSIS is an infectious disease of the skin. It may be considered as a benign neoplastic disease[1] because of the proliferative changes induced in the epithelial cells by the causative agent, although some believe this is not a true tumor.[2] Cattle are the most frequently affected of domesticated animals. The disease also occurs in man,[3] dogs,[4,5] horses,[6] and a number of wild animals.[7,8] Papillomatosis is widespread throughout the world, and in countries with large cattle populations it causes economic loss. Little is known of the epizoötiology of this disease. The appearance of papillomatosis in a herd of Hereford cattle owned by the University of Nebraska offered an opportunity to observe the epizoötiology of the disease and these observations are presented in this report.

MATERIALS AND METHODS

History.—The animals were raised on a single ranch and were received on Nov. 4, 1948, as yearlings at the Valentine substation for a feeding experiment. They were placed in 16 lots with 10 animals in each. The lots were arranged in two parallel rows of eight lots each, running east and west. The two rows of lots were about 50 yards apart and separated by a building. Each lot was approximately 26 by 100 ft. A woven wire fence on the long dimension separated the adjacent lots. Each pair of lots had a water tank which served the animals on both sides (fig. 1).

The feeding experiment was begun on Nov. 19, 1948. Bovine hyperkeratosis was noticed among the calves the middle of March, 1949. A plan was outlined to study this condition.[9] This consisted of leaving the animals in their original lots and examining them at regular intervals. A record of symptoms characteristic for the disease was kept for each animal.

Papillomatosis made its first appearance May 12, 1949, on an animal in lot 16 (fig. 2). More animals with papillomatosis were encountered during subsequent observations. Since a possible relation of papillomatosis to bovine hyperkeratosis was suspected, the development of papillomatosis was kept under close observation. This included a rough approximation of location of the warts, their appearance, and duration.

On June 20, 1949, a new experiment was begun to study the relation of feed to an outbreak of bovine hyperkeratosis.[9] To accomplish this, the entire group underwent a rearrangement. Most of the cattle from lots 11 to 16 were distributed to remaining lots. These lots were then occupied by a number of new calves. The animals remained in this arrangement until Aug. 18, 1949, when the majority of cattle were moved to pasture. After this, most of the cattle were kept on pasture during the greater part of the year. They were brought into close contact during the winter on a dry winter range (40 acres) and also had access to the previously used lots with windbreak and buildings.

Altogether, complete histories were obtained on 110 animals and used for this study. The histories of the animals that died during the study or those with incomplete data were excluded from the survey.

RESULTS

Papillomatosis was observed in 82 (74.5%) of the 110 cows studied. This covered the period from May 12, 1949, to Sept. 13, 1951, when the last observation was made. Two episodes of the disease were noticed during its course (graph 1). These episodes represent periods when the infection spread to a large number of cattle. Fifty-seven animals became affected during the first episode of disease from May 12, 1949, to Nov. 29, 1949; 22 new cases of papillomatosis appeared during the later episode of disease from May 24, 1951, to Sept. 13, 1951. In addition, 32 animals that had warts during the early episode of disease became reinfected in the second episode. Only 3 cases appeared in the interval between these two episodes (from Nov. 29, 1949, to May 24, 1951).

The data were examined to ascertain the mode of infection of each animal. Criteria for this were the appearance of papillomatosis in an animal and its contact with a focus of infection (affected animals with an arbitrary interval of a least two months*

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*This was a compromise between an incubation period of three weeks to two months for papillomas produced by experimental inoculation and the observation of three to four months' contact required before development of new cases in another phase of this study.

as an incubation period). Fifty-seven cases whose history could be critically examined were selected for this phase of the study (table 1). These animals developed papillomatosis while they were confined in the lots. Twelve animals exhibited disease within four to six weeks following the appearance of papillomatosis in the herd. Four original foci of infection were believed to have existed among the animals. An assumption, therefore, was made that these 12 animals became infected directly from the original four foci. No attempt could be made to ascertain the origin of infection in the four foci. In 29 cases, there was evidence that animals became infected through direct contact with cattle having papillomas or which had been previously affected with papillomatosis. Indirect contact with affected animals was believed responsible for infection of the other 14 cases. Six of them were cattle separated by a wire fence from affected animals in the adjacent lots. The remaining 8 cases acquired the disease while they were separated from infected animals by a wire fence and a water tank. There were no clues as to the mode of infection of 2 animals.

TABLE 1—Mode of Infection in 57 Cattle Affected with Papillomatosis

In orig. foci	Direct contact	Indirect contact through fence	Indirect contact through fence & water tank	Undetermined	Total
12	29	6	8	2	57

An attempt was made to ascertain the duration of contact required for papillomas to appear on an animal. The data on 11 animals were reliable for this purpose. Five of them came from three lots where no previous cases existed. Following the rearrangement of cattle on June 20, 1949, these animals were added to an infected population in three lots. Papillomas were observed on 2 animals 101 days after they had been in contact, whereas in the other 3 they were noticed when examined at 126 days. The other 6 animals were in lot 1. They were in contact with an animal which exhibited papillomatosis on June 30, 1949. No rearrangement of animals was made in this lot. These animals were in continuous contact with the carrier of infection since the beginning of the epizoötic. The infection was observed in 2 animals at 101 days and in 4 at 126 days.

TABLE 2—Sites of Body on Which the Infection Made Its First Appearance* (80 Animals)

Region	Cases	Region	Cases
neck	26	throat	2
chin	21	lip	2
shoulder	18	cheek	1
dewlap	13	nose	1
ear	6	back	1
ocular	3	udder	1

*In several cases, infection was observed beginning on more than one site.

The papillomatosis made its appearance on the following sites of the body: neck, chin, shoulder, dewlap, ear, ocular region, throat, lip, cheek, nose, back, and udder (table 2). The neck, chin, shoulder, and dewlap appeared to be sites of predilection as compared with other areas of the body (fig. 2).

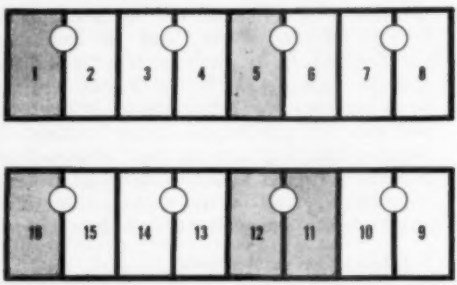


Fig. 1—Diagram showing arrangement of the 16 lots in which papillomatosis occurred in cattle. The location of water tanks serving adjacent lots is shown. The disease first appeared in the four foci indicated as shaded areas (these were lots 1, 5, 16, and 11-12).

The data were studied to ascertain approximate duration of papillomatosis on each animal (table 3). Some animals had only a few papillomas, others had successive growths of papillomas in different areas and overlapping with respect to time. The records of 70 animals were suitable for study of the duration of papillomatosis. In 32 animals, papillomatosis persisted from approximately thirty-five to sixty-one days. In 15 animals the disease lasted from about seventy-four to eighty-nine days. There were 11 animals with papillomatosis of

TABLE 3—Duration of Papillomatosis on 70 Animals

Days	18-28	35-61	74-89	98-122	131-173
No. of animals	11	32	15	4	8

eighteen to twenty-eight days' duration, 4 with a duration of ninety-eight to 122 days, and 8 from 131 to 173 days.

DISCUSSION

Several significant observations were made on bovine papillomatosis. After appearance of the first case, several more animals developed the disease within a few weeks. These animals were in four different locations, each of which was regarded as a focus of infection that later spread to other cattle (fig. 1). These foci evidently led to exposure of a number of animals at about the same time. How the infective agent was introduced into the herd and by what means remains an unanswered question. The role of vectors and fomites in spread of infection is unknown. Ectoparasites existed on the animals even though they were sprayed on two occasions. Possibly they played a role in dissemination or even origin of this disease. It is noteworthy that the first case occurred six months after the cattle were placed in lots and, therefore, it is probable that they were free of infection when received. Another herd of cattle consisting of milk cows and young calves was kept on the premises. Papillomatosis did not exist among animals of this herd so far as could be ascertained. Unapparent carriers of infection may have been present. There was no direct contact between the herd of milk cattle and the experimental lots, although the same herdsmen attended both groups of cattle.

The condition spread in a period of about three months to all 16 lots, affecting more than half of the animals investigated. This clearly demonstrates the contagiousness of the disease. It must be recalled that a change in arrangement of animals was made in order to accomplish the basic experiment designed to study bovine hyperkeratosis. This would, of course, aid spread of infection among the animals. Doubt can be raised whether the infection would have gained entrance to all lots under unchanged original conditions. Much less favorable conditions for the spread of infection existed on the pasture since only 3 new cases developed while on pasture.

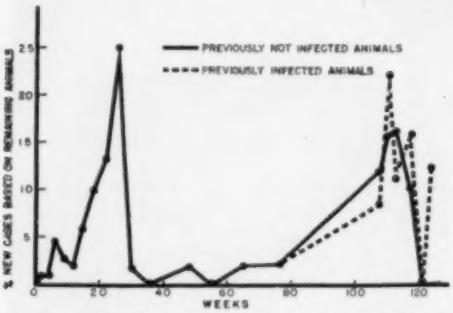
The appearance of infection in a large number of animals, and reinfection in a second episode of animals previously affected, could have occurred as a result of exposure during closer contact in the preceding winter months. Two episodes of papillomatosis may have represented two separate outbreaks of the disease. The number of animals affected in the first episode was 51.8 per cent of the group and in the second episode 50 per cent of the group. There was no evidence of immunity, because 32 of 60 (53.3 %) previously affected animals developed warts in the second episode. During the second episode, 22 of 50 (44.0 %) animals not previously affected developed warts. The period of the winter of 1949 to 1950 was notable for the low incidence of papillomatosis. No observations were made from October, 1950, until May, 1951, so the record was not complete. However the data (graph 1) suggest a beginning of the second episode in May, 1951, that must have been the result of exposure in the previous spring and winter months. Reinfection of cattle during the second episode must have been due to loss of immunity, or the outbreak was due to an immunologically different agent.

Fig. 2—Illustration of warts occurring on chin immediately below lower lip, a common site in the outbreak studied. This was the first case of papillomatosis to develop in lot 16. Note the development and concentration of individual papillomas.

Both episodes were characterized by high peaks of morbidity (graph 1). In the first episode, there was a gradual build-up of morbidity to a peak and then a sudden drop. This occurred during thirty weeks. The morbidity rates during the second episode were not as high if the previously infected animals were considered separate from the previously noninfected. If added together, the data would indicate a slightly higher peak and a more gradual slowing down of the morbidity rate.

Contact infection seemed to be responsible for the spread of disease in a majority

of animals investigated. There may have been less chance for intimate contact with each other on pasture than in lots. This is suggested from the smaller number of new cases developing during the grazing period. The existence of contact infection is also demonstrated in a history of a herd[10] where all animals developed papillomatosis a few months after a cow with the disease was introduced into the herd.



Graph 1—Graphic representation of the time of appearance of 82 new cases of papillomatosis in cattle during two episodes of the disease. Reinfection occurred in 32 of the cattle during second episode. The first case was noted May 12, 1949, and the last new case was observed Sept. 13, 1951. The dots also show the interval between observations.

Exposure of cattle to infected animals through a woven wire fence seemed to result in spread of infection in some cases. The use of a common water tank by infected and noninfected animals did not significantly increase the spread of infection where the opportunity for spread through a fence already existed.

The favored sites of papillomas on the body suggest that they appear on those parts of the body subject to contact between animals. Perhaps two factors were involved in determining the sites for development of papillomatosis in our study. The first would be the mechanisms by which abrasions of the skin could occur and, second, exposure of these wounds to the agent of papillomatosis. Under the conditions of our feedlot arrangements, there was ample opportunity for minor scratch wounds around the chin, head, and neck from boards and nails of the hay racks and feed bunks as well as the wire fences. The proximity of animals in the lot would permit rubbing together of the wounded areas of susceptible animals and papillomatous areas of affected animals. Possibly, material from papillomas could rub off onto boards or fences and cause simultaneous infection at the time of injury to a susceptible animal.

Liess[11] observed in Germany that clinical cases with excessive papillomatosis usually began on the abdominal wall. The appearance of papillomatosis on the posterior aspect of the front leg and the anterior aspect of the hind leg was attributed by him to contact of these parts with papillomas on the abdomen. Frenz[12] reported a high incidence of papillomatosis in a German herd where the most common locations were the abdominal wall, the legs, and back. The teats were often affected in milking cows. Wirsching[13] concluded from his study on papillomatosis in Germany that the neck, abdominal wall, and udder were the common sites. Some of these areas of skin were only slightly affected in our study. The difference may have been due to variations in the type of management of groups of cattle. The stabling conditions in European countries are markedly different from the experimental lot conditions under which our observations were made. Fomites and likelihood of wounds may have been involved in the spread of disease and were responsible for excessive appearance of papillomas on the abdominal wall in the cases reported by Liess[11] and Frenz.[12] The high incidence of papillomatosis on the udder in milking animals may have been caused by herdsmen whose role remains unknown.

Evidence indicated that, under lot conditions, papillomas appeared after three and one-half to four months of contact with affected animals. Although this observation was made on a limited number of animals, this period seems to be rather long when compared with the incubation period of three weeks to two months for experimentally produced papillomatosis.[11,14-16] The duration of papillomas of from one to five and one-half months under conditions of our study coincides with observations of others on experimental papillomatosis.[11,15,16] No attempt was made to influence the natural course of the disease.

SUMMARY

The epizoötiology of an outbreak of papillomatosis lasting two and one-half years was studied in 110 Hereford cattle. The

disease was observed in 82 animals, or 74.5 per cent of the animals studied. The first case was observed after the animals had been isolated in feeding lots for six months. Early cases were noted in four separate areas regarded as independent foci. The origin of infection could not be ascertained.

There were two episodes of the outbreak. In the first episode, lasting thirty weeks, 57 animals became infected under lot conditions. Two years later, 22 cases developed on pasture. In addition, 32 animals previously affected with papillomas became reinfected during the second episode. Only 3 cases were observed between these two episodes. Reinfection of cattle must have been due to loss of immunity, or the second episode was another outbreak due to an immunologically different agent.

The method of spread of the disease was studied in 57 cases. Originally there were 12 cases in four widely separated foci. It could be established that 29 additional cases developed from direct contact with affected animals. In 14 other cases, the disease seemed to spread through a woven wire fence. Close contact and proximity (separated by a wire fence) were lacking in 2 cases whose source of infection could not be established. Possible mechanisms for spread of the disease were discussed.

The interval from intimate contact with papillomatosis cases to appearance of 11 new cases was three and one-half to four months. The duration of disease in 70 cases was one to five and one-half months.

The more frequent sites of papillomatosis were the neck, chin, shoulder, and dewlap. The possibility for wounds and exposure of these areas may be factors favorable to development of the disease.

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Simultaneous Vaccination with Modified Live Hog Cholera Vaccine and Hog Cholera Antiserum

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In early laboratory studies on rovac,® modified live hog cholera vaccine, it was felt that the antibody from homologous antiserum, administered simultaneously with modified virus, would interfere with the establishment of active immunity. However, investigation of this possibility[1] demonstrated that immunogenic potency of the vaccine was not affected. All of 10 pigs injected simultaneously with 2 cc. of modified virus and 30 cc. of hog cholera antiserum of proved potency survived challenge with 1 cc. of virulent porcine blood containing at least 10,000 lethal doses of hog cholera virus thirty-five days postvaccination. As this initial study had been conducted with only a small number of pigs, additional experiments using more significant numbers were instituted.

From Lederle Laboratories Division, American Cyanamid Co., Veterinary Clinical Research (Harvey), Pearl River, N.Y.; and manager (Cooper) St. Joseph, Mo., plant.

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TABLE 1—Plan of Experiment for Simultaneous Administration of Rovac and Hog Cholera Antiserum*

Group	No. of pigs	Average weight	Vaccination: Rovac	Vaccination: Serum
A	50	114 lb.	2 cc.	60 cc.
B	49	123 lb.	2 cc.	30 cc.
C	10	123½ lb.	.....	60 cc.
D	10	112½ lb.	.....	30 cc.
E	30	123 lb.	Uninoculated contact controls	
F	13	115 lb.	Uninoculated susceptibility controls	
G	8	70 lb.	2 cc.	100 cc.
H	2	70 lb.	.....	100 cc.
J	2	61 lb.	Uninoculated controls	

*Half of the pigs in groups A to D to be challenged sixty days postvaccination; half to be challenged 183 days postvaccination.

This report involves 174 pigs; 107 simultaneously vaccinated with 2 cc. of modified virus and either 30 cc., 60 cc., or 100 cc. of hog cholera antiserum, 22 inoculated with antiserum alone in the above dosages, and 45 uninoculated controls. Pigs were challenged with virulent virus sixty and 183 days following inoculation.

PROCEDURE

A total of 174 pigs of various breeds were selected. They were average farm animals, in fair to excellent condition, and were purchased from four different sources where hog cholera immunization was not practiced, and where there was no history of hog cholera. They were moved to a farm where pigs were not raised and where the premises were known to be free of hog cholera virus, and were held in complete isolation in an 8-acre field, fenced hog-tight, for the duration of the experiment. Aurofac® 2-A vitamin B_{12} and antibiotic feed supplement was added to standard hog feed.

After one week's quarantine, the pigs were declared symptomatically free of disease. They were then divided into groups for inoculation purposes, as shown in table 1. Each group contained a proportionate number of pigs from each source. Pigs that weighed an average of 70 lb. received a dose of 100 cc. of serum and 2 cc. of modified virus in order to determine if the administration of very large doses of serum would interfere with the multiplication of the modified virus and the establishment of active immunity. Uninoculated controls, groups E, F, and J, were held in the test quarters in contact with the inoculated pigs, as proof that no virulent hog cholera virus was introduced onto the premises during the course of the trial.

A regular commercial lot of rovac, No. 214A, and hog cholera antiserum, serial No. 54V1904, were used for all immunizations. Two cubic centimeters of modified virus, the recommended dose, was administered intramuscularly in the medial aspect of the ham, and hog cholera antiserum was injected subcutaneously into the axillary space except in those receiving 10 cc. of antiserum, where the intraperitoneal route was used.

To prove susceptibility, 13 uninoculated pigs (group F), which included 2 to 5 pigs from each of the four sources, were moved to an isolated area one week after the pigs of the other groups were inoculated. Each pig of group F was injected intramuscularly with 2 cc. of whole blood virus known to be highly pathogenic. One pig showed a moderate febrile response but recovered, and was considered immune. The 12 remaining pigs of this group exhibited typical temperature curves and symptoms of hog cholera, and were destroyed on the sixth day postchallenge. At autopsy, they presented lesions considered descriptive of hog cholera, and the blood from these pigs was used for commercial virus production.

Sixty days after inoculation, half of the pigs in each of groups A, B, C, and D and all those in groups G, H, and J (*see* table 1) were removed to an isolated area and challenged in the same manner as the controls above. Temperatures were recorded and pigs were observed for eighteen days postchallenge. The remaining pigs in groups A, B, C, D, and E were held in the original quarters and were challenged in the same manner 183 days from the date of inoculation.

RESULTS

Following inoculation, no reactions were observed in either the vaccinated, serum-inoculated, or uninoculated controls. All animals remained healthy and made normal weight gains from the time of inoculation to challenge.

Table 2 shows the results of the sixty-day challenge. There were no deaths in any of the pigs vaccinated simultaneously, although 8 of the 56 showed a febrile reaction. On the other hand, 2 of the pigs receiving 100 cc., 4 of the 5 which received 60 cc., and all 5 which received 30 cc. of serum alone showed typical temperature curves and symptoms of hog cholera and either died or were destroyed when moribund. At autopsy, all had lesions indicating hog cholera, proving loss of passive immunity at the time of challenge.

One of the 30 uninoculated contacts held with the vaccinated pigs as contact controls

TABLE 2—Results of Challenge with Virulent Whole Blood Hog Cholera Virus Sixty Days Following Simultaneous Vaccination with Rovac and Hog Cholera Antiserum

Group	No. of pigs	Vaccination: Rovac	Vaccination: Serum	Died or killed moribund	Ratio of Deaths/ Total
A	25	2 cc.	60 cc.	.....	0/25
B	23	2 cc.	30 cc.	.....	0/23
C	5	.....	60 cc.	4	4/5
D	5	.....	30 cc.	5	5/5
F	13	.....	.....	12	12/13
G	8	2 cc.	100 cc.	.....	0/8
H	2	.....	100 cc.	2	2/2
J	2	.....	.....	2	2/2

TABLE 3—Results of Challenge with Virulent Whole Blood Hog Cholera Virus 183 Days Following Simultaneous Vaccination with Rovac and Hog Cholera Antiserum

Group	No. of pigs	Vaccination		Ratio of deaths /total animals
		Rovac	Serum	
A	25	2 cc.	60 cc.	0/25
B	26	2 cc.	30 cc.	0/26
C	4	.....	60 cc.	4/4
D	5	.....	30 cc.	5/5
E	5	Uninoculated contact controls		3/5

died one month after the initiation of the experiment. Autopsy revealed that pneumonia and hepatitis were the cause of death. All other pigs remained healthy and gained weight.

Results of challenge with virulent whole blood hog cholera virus 183 days following simultaneous vaccination with modified virus and hog cholera antiserum are presented in table 3. There were no deaths in any of the 51 pigs inoculated simultaneously with 2 cc. of modified virus and either 60 cc. or 30 cc. of antiserum. A slight febrile reaction was noted in 5 pigs but all recovered. Five pigs inoculated with 60 cc., and 4 pigs inoculated with 30 cc., of antiserum alone succumbed to challenge, exhibiting typical symptoms of hog cholera, indicating that their passive immunity was lost. A fifth pig in group C, inoculated with 60 cc. of antiserum, was unintentionally killed before the challenge date.

At the completion of the first phase of the experiment, *i.e.*, the sixty-day challenge test, 14 of the 29 uninoculated contact controls were disposed of. The 15 remaining pigs continued to be disease-free and gained weight, showing that the premises were free of hog cholera virus throughout the trial. Five of this group were challenged with the other pigs in the experiment, and 3 of the 5 succumbed to challenge. Two pigs showed no reaction. From previous experience with rovac, we may postulate that these 2 animals were immune by contact. This situation is unusual but may occur on rare occasion.

DISCUSSION

These results indicate that simultaneous administration of serum, in dosages much larger than those usually employed in the field, had no adverse effect upon the development of active immunity by rovac. As 100 cc. of antiserum would be considered a large dose in 70-lb. pigs, it is apparent that the immunogenic potency of modified virus is not affected by massive doses of antiserum. Passive immunity conferred by homologous serum was lost within sixty days, as shown by the death of the pigs that received antiserum alone when they were challenged with 2 cc. of whole blood virus, whereas pigs which received modified virus and antiserum lived.

While, under the usual farm conditions, there are relatively few indications for the use of hog cholera antiserum with modified virus, it is recognized that, under certain circumstances, such usage might be desirable or even essential. Immediate protection may be needed for susceptible, asymptomatic animals known to have been exposed to virulent virus. Of special importance are animals that are being moved through sales barns or those that are to be shipped. The results obtained here clearly show that even above average doses of hog cholera antiserum may be administered simultaneously with rovac.

SUMMARY

Active immunity is produced by modified virus in the presence of antibodies from homologous hog cholera antiserum, administered simultaneously. All of 25 pigs inoculated with 2 cc. of rovac® and 60 cc. of serum, 23 pigs inoculated with 2 cc. of rovac and 30 cc. of serum, and 8 pigs inoculated with 2 cc. of rovac and 100 cc. of serum, survived challenge with the intramuscular injection of 2 cc. of virulent whole blood hog cholera virus sixty days postvaccination; whereas 11 of 12 pigs, inoculated with serum alone in the respective dosages, succumbed. Similarly, 25 pigs and 26 pigs receiving 2 cc. of rovac and 60 cc. or 30 cc. of serum, respectively, and challenged in the same manner at 183 days, survived; while 9 pigs inoculated with serum alone succumbed. Susceptibility of the animals and virulence of the challenge virus was proved by death from hog cholera of 12 uninoculated controls similarly challenged. Continued freedom of the premises from hog cholera virus was demonstrated by normal growth and weight gains of 29 of 30 uninoculated contact controls maintained with the vaccinated animals for sixty days, and 15 for 183 days. The one death was due to unrelated disease. Of 5 contact controls challenged at the end of the experiment, 3 succumbed and 2 showed no reaction.

These findings indicate that the protection present 2 months after inoculation was still active four months later. Immunity persists for at least six months after simultaneous administration of rovac and hog cholera antiserum.

NUTRITION

Antibiotics in Dog Feed

Pups are not fed for market as are pigs and chickens, but steadier weight gains from feeding antibiotics or other growth stimulants might be advantageous during the critical few weeks after weaning. However, where gains have been made, they seem to have been in fat alone.

Aureomycin given intravenously to dogs had less effect on the intestinal flora than when given *per os*. It is presumably excreted into the alimentary tract in saliva and bile.—*Gaines Veterinary Symposium, Kankakee, Ill., Oct. 22, 1952.*

Antibiotics and Rumen Digestion

Cellulose or fiber digestion by ruminants is believed to be accomplished by microorganisms, many of which would be sensitive to destruction by antibiotics. Their use, therefore, should serve to differentiate between organisms that are essential and those possibly inhibitory to cellulose breakdown. Studies were made *in vitro* on the rumen contents of a fistulated cow on a normal hay and grain ration.

Low concentrations of penicillin (7.5 units per ml.) stimulated digestion of cellulose. Higher concentration of penicillin (15 units per ml.) resulted in a 35 per cent decrease in cellulose digestion.

Streptomycin had no influence at a level of 12.5 μg. per milliliter but it decreased cellulose digestion 15 to 20 per cent below controls at concentrations of 50 or 25 μg. per milliliter.

Chloromycetin at a level of 25 μg. per milliliter decreased cellulose digestion 30 per cent and twice this level lowered it more than 50 per cent.

Neomycin stimulated cellulose digestion at all levels tested, *i.e.*, 6.25, 15.5, and 25 μg. per milliliter of medium. Lowest concentrations gave the greatest stimulation — 30 per cent. The observed changes in cellulose digestion by rumen contents are interpreted as the result of changes in the microbial populations. The study did not include aureomycin which had been reported to decrease fiber digestion in steers. —*Nutr. Rev., Jan., 1953.*

Phosphorus Affects Gains

At the University of California Experiment Station, two pens of cattle were fed on alfalfa hay only, for a ninety-one day period. The hay fed to one lot was produced on a field well supplied with phosphorus and had a phosphorus content of 0.25 of 1 per cent. The hay fed to the other lot was from a field low in phosphorus and contained 0.1 of 1 per cent. The former lot gained 2.19 lb. daily while the latter lot averaged 0.53 lb. of gain daily.—*West. Livestock J., March, 1953.*

Urinary Calculi in Lambs.—Studies at Beltsville, Md., indicate that a high ration content of vitamin D and of silicate, either alone or together, favor the precipitation of minerals into urinary calculi in fattening wethers. Calculi consist chiefly of magnesium phosphate. They frequently occur in the Southwest in steers on a diet of sorghum products and cottonseed meal which have a high content of magnesium and a low content of calcium.—*Rep., Chief, B.A.I., 1952.*

Antibiotic Pig Pellets.—Reports from the University of Missouri state that bacitracin pellets are of value when injected into young pigs but do not stimulate growth when implanted in pigs more than 2 weeks old. When implanted in 2-day-old pigs they outgain controls by 1 lb. at 4 weeks and 2½ lb. at 6 weeks. Some pigs were helped more than others.—*Farm J., Feb. 1953.*

Trace mineralized salt should contain percentages of: 0.2 of iron, 0.02 copper, 0.01 cobalt, 0.24 manganese, and 0.007 iodine.—*Vet. Sci. News, Jan., 1953.*

In the past twenty years, oil meal production in the United States has increased about 400 per cent, due almost entirely to the advent of soybean meal. Most of it is fed to swine and poultry. The annual market value of the oil meals is about one billion dollars.—*Nutr. News Bull., Oct., 1952.*

EDITORIAL

Southern Regional Program a Boon for Veterinary Education

Now that the Southern Regional Education Compact is maturing and is about to graduate the first class enrolled under its regional system, the 13 participating states may well be credited with making a success of a pioneering educational venture. The nine coöperating states which have no veterinary colleges are reported to have 354 veterinary students enrolled in the five regional veterinary schools, so the plan is obviously functioning effectively. The veterinary colleges participating are at the Alabama Polytechnic Institute, University of Georgia, Oklahoma A. & M. College, and Texas A. & M. College — all land-grant colleges — and at Tuskegee Institute which is a privately supported school.

The Southern Regional Education Compact was developed as a result of the unprecedented influx of students into all educational courses and institutions shortly after World War II. With each school flooded with students from its own state, applicants from out of state were seldom admitted. In more general educational courses, this was of less consequence since such courses are offered in one or more schools in almost every state. However, the providing of professional school facilities for such applicants, especially veterinary medical applicants, was a real problem.

When the war ended, there were only two veterinary schools in the region which, except for West Virginia and Delaware, included all the states south of Pennsylvania and the Ohio River and east of the Mississippi, plus Louisiana, Oklahoma, and Texas. The two existing schools were in Alabama and Texas and, at that time, both were understaffed and poorly equipped, due to limited financial support; hence, it was not possible for them to expand their staffs and facilities to accommodate the increased number of applicants.

In the fall of 1945, Tuskegee Institute opened its doors to freshmen veterinary students; Georgia followed in 1946 and Oklahoma in 1947. The opening of the three new schools helped materially to meet the demand; however, it was still necessary for the two older schools to expand their staffs and facilities in order to graduate the minimum number of veterinarians that was estimated would be needed to protect the livestock industry of the South.

A Regional Compact

Since these five schools are located in four states, applicants from the remaining nine regional states still found it difficult to enroll in a veterinary school. Actually, Texas which joined the group later was not involved when, after thoroughly studying the proposal for this novel idea which emphasizes reciprocity in education, the governors of the regional states, in 1948, signed the document which had been subscribed to by their legislatures. This established the regional compact and inaugurated its contract programs. The advantages to the five veterinary institutions now participating, four public and one private, in the 13 states are that each can expand and strengthen its courses with the coöperation and financial support of all, or at least some, of the coöperating states.

The three professional courses which were the first to benefit from the regional program were veterinary medicine, medicine, and dentistry, for which facilities were relatively rare and expensive. The annual cost to coöperating states varied with the course, the highest being $1,500 per year per medical or dental student, with $1,000 per year for each student of veterinary medicine. This year, there are a reported 354 veterinary students enrolled under the plan. This means that the nine states which are without veterinary schools are paying to the institutions at which the veterinary schools are located a total of $354,000.

Payments from the coöperating states to the regional school are guaranteed up to ¾ of the quota. Thus, a state whose quota

was 10 would pay to the regional school a minimum of $7,500, even if *no* students were enrolled. If 7 students were enrolled, the regional school would still receive ¾ of $10,000, or $7,500; but if 8 enrolled it would receive $8,000, and if 10 enrolled, $10,000. The out-of-state students pay the same tuition fees as home-state students.

ASSIGNMENT OF STUDENTS

The assignment of quotas to the various coöperating states and the designation of the states that will send students to each regional school is determined by the Southern Regional Education Board, with the approval of representatives from the regional schools. The final selection of the applicants is made by the school.

It is obvious that, under provisions of the present contracts, students do not have a choice of schools; however, this feature has not been a serious handicap. As the plan operates at present, Florida has a quota of 12 students, Kentucky 10, Tennessee 10, and Mississippi 8, for admission to the School of Veterinary Medicine at Alabama Polytechnic Institute, a total of 40 out-of-state students for each class. The quotas for the University of Georgia consists of 37 per class: 10 from Maryland, 8 from North Carolina, 7 from South Carolina, and 12 from Virginia. Texas A. & M. has at present quotas of 8 per class from Louisiana and 6 from Virginia, a total of 14 per class. Oklahoma A. & M. at present has a quota of only 2 students per year from North Carolina. Tuskegee Institute, being the only Negro veterinary school, draws from all 12 coöperating southern states, their quotas being: Florida 1, Georgia 3, Kentucky 2, Louisiana 4, Maryland 2, Mississippi 3, North Carolina 4, South Carolina 2, Tennessee 2, and Virginia 2, or a total of 25. In addition to the regional students, Tuskegee also accepts students from other states that are not in the regional program inasmuch as the quota under the regional program is usually not filled.

STUDENTS SHOW APPRECIATION

The extent to which veterinary medicine in the South has taken advantage of this regional program is indicated by the fact that during the year 1951-1952, 30 per cent of the 821 students participating in the four courses in the regional schools were students of veterinary medicine; 38 per cent were enrolled in medicine, 30 per cent in dentistry, and 3 per cent in social work.

Last year a questionnaire was sent to the 821 participating students to which 89 per cent replied. The veterinary group showed its appreciation of the program with a 97 per cent response. The replies revealed that 35 per cent had, before the regional plan became effective, applied for admission at nonregional veterinary schools but only 7 per cent, a fifth of the applicants, had been accepted. This indicates how hopeless their plight had been. Also revealed were the intentions of 83 per cent of the veterinary students to practice in their home state after they graduated, which is a very encouraging response.

This is fortunate because, with the livestock population increasing more rapidly in the southeastern region than in other sections of the country and with parasites and some other diseases less restricted because of the mild winters, the success of the South's livestock industry will depend largely upon the protection provided it by veterinary medicine.

Great opportunities lie ahead in the southeast region for the veterinary profession, its schools, and the individual graduates. That the region is alert and responding to the challenge is indicated by the fact that three of the seven newly established veterinary schools are located in that area. This is for them an increase of 150 per cent versus 70 per cent for the entire United States. Some believe there should be more schools but, perhaps, after such a phenomenal expansion in the past few years, caution would indicate a period of stabilization and consolidation before further expansion is seriously considered.

OTHER REGIONAL PLANS

The first interstate coöperative program of this nature was put into effect in 1944 when the Medical College of Virginia agreed to accept from West Virginia University 20 students each year who had completed a prescribed two-year basic science course. West Virginia University paid a subsidy fee of $1,000 per student with a minimum of $17,000 per year, and the student paid the same tuition fees as Virginia students.

A somewhat similar plan was recently inaugurated whereby the University of

Colorado will accept 10 medical students per year from Wyoming and 10 from New Mexico. It is a tentative plan to be used until a regional plan for the entire Rocky Mountain or the western area could be perfected. The eight so-called Rocky Mountain states in 1951 had only two medical colleges, no dental schools, and only one veterinary medical school—at Colorado A. & M. College. A bill was introduced in Congress on April 1, 1953, to establish the Western Interstate Commission for Higher Education. If passed, this commission can become operative as soon as the plan is adopted by any five of the 11 western states, plus Alaska and Hawaii.

In this area are three veterinary medical schools—those at the University of California, Davis; the State College of Washington, Pullman; and Colorado A. & M. College, Fort Collins.

More About Bloat

History failed to record whether Noah's ruminants suffered from bloat. If they did not, probably some of their not too remote descendants did. But probably never until 1952 was acute tympanites, because of heavy losses in recent years, dignified by being recommended for special research study by a standing committee of advisors to the Secretary of Agriculture.

For that reason, the JOURNAL is pleased to bring its readers an up-to-the-minute review of the subject by a practical physiologist (*see* pp. 345-353.). Dr. R. W. Dougherty served on the original National Research Council's committee on bloat (*see* JOURNAL, November, 1943, pp. 294-296) and, for the past five years, has been in the Department of Veterinary Physiology at Cornell University devoting much time to the digestive peculiarities of ruminants, using many animals with rumen fistulas as his guinea pigs.

However, bloat is so common that millions of persons have aided in attempting to provide relief for stricken animals and many, nonprofessional as well as professional, have their own pet theories on what causes and what relieves the condition.

Nearly forty years ago, while assisting a practicing veterinarian, an emergency call was made to see several bloated cattle in one herd. It was a damp day with a cold, raw wind. None of the animals was in an extremely critical condition; neither were any showing improvement. They were immediately moved into a barn and the animal most severely bloated was treated. It was then noticed that all of the affected animals were surprisingly improved. In the few minutes they had been indoors, and without being exercised, their bloated condition had markedly receded. Could it have been the removal from the cold, damp wind? Perhaps not but the same phenomenon has been observed several times since.

Therefore, logical or not, while in practice the first telephone instruction given an attendant, when a "bloat" call came, was to place the animal or animals in a comfortable draftless building, if one was available. Also, because an acute bloat case is likely to be dead on arrival, the attendant was advised to drench each of the afflicted with a few ounces (a half cupful) of oil or kerosene and to be ready to use a trochar or a large knife on that tense left flank if the distress became too great. This was considered first aid treatment about which every stockman should be advised. This standard telephone advice probably saved many bloated animals and many fruitless calls. Why a small quantity of oil is so effective is a question, unless it acts as a detergent. Perhaps recoveries would occur without it but it does seem to benefit many cases.

In recent years, detergent preparations have been used extensively. They seem to be more effective in some territories than in others, which suggests that the character of bloat may vary with the territory. Another observation that suggests such a variation is that legume bloat seemed much more troublesome in a county with a high lime soil content than in a nearby county where there was less lime. In the latter it was more difficult to get a good stand of legume, which might indicate a difference in the plant substance that could be responsible for less bloating. However, if there is more bloating where more lime is present, it would contradict the idea that placing lime in the water tank will be effective as a bloat preventive.

Acute bloats occasionally occur without access to any growing plants. On each of two occasions, 2 steers in feed yards bloated and quickly died when they accidentally got a few bites of new third cutting alfalfa hay. Apparently, we still have much to learn about bloat.—W.A.A.

CURRENT LITERATURE

ABSTRACTS

Toluene Against Ascarids and Bots in Horses

In limited trials, toluene, administered after a fast of twenty-four hours in dosages of 10 to 20 cc. per hundredweight, removed all of 5 ascarids *(Parascaris equorum)* from 2 horses and 52 per cent (119) of 226 bots *(Gasterophilus nasalis* and *Gasterophilus intestinalis)* from 5 horses; there was no significant action against strongyles. The chemical was well tolerated and no significant lesions were found at autopsy. These and other available data indicate that toluene warrants further investigation as an equine parasiticide, especially in ascariasis.—[*L. R. Sinclair and F. D. Enzie: Toluene Against Ascarids and Bots in Horses. Am. J. Vet. Res., 14, (1953):* 49-50.]

A Flap Operation for Small Ruminal Fistulas

The technique for establishing a flap type of rumen fistula in sheep is described. Fistulas of this type afford ready access to the rumen, usually are not messy, and do not require plugging.—[*Roy E. Nichols: A Flap Operation for Small Ruminal Fistulas. Am. J. Vet. Res., 14, (1953):* 35-36.]

Calcium, Inorganic Phosphate, and Magnesium Values of Horse Blood

Correlation coefficients for calcium and inorganic phosphates were 0.1 for 20 draft horses and 0.27 for 36 saddle horses. Correlation coefficients for calcium and magnesium were 0.11 and 0.13; for phosphates and magnesium, 0.05 and 0.16. No linear relationship could be demonstrated. The author interprets these data as indicating that venous blood calcium, inorganic phosphate, and magnesium vary independently.—[*Roy E. Nichols: Can Calcium, Inorganic Phosphate, and Magnesium Values of Horse Blood Be Expressed as Ratios? Am. J. Vet. Res., 14, (1953):* 60-61.]

Isolation of Listeria Monocytogenes from Sheep

Various procedures to increase the frequency of isolation from various organs and tissue of natural and experimental cases of listeriosis were used. Culturing 0.25 to 1.0 cc. of tissue ground with tryptose broth medium in duplicate was superior to the use of storage in glycerin, inoculation of mice, use of crystal violet or potassium tellurite in selective mediums, or centrifugation in obtaining primary isolation free of contamination.—[*Carl Olson, Jr., L. A. Dunn, and C. L. Rollins: Methods for Isolation of Listeria Monocytogenes from Sheep. Am. J. Vet. Res., 14 (1953):* 82-85.]

In Vitro Testing of Sulfonamides

N'butyryl sulfanilamide, sulfabenzamide, sulfathiazole, sulfacetamide, sodium sulfacetamide, phthalylsulfacetamide, and N'propionyl sulfanilamide were tested *in vitro* for their antibacterial effect on *Micrococcus pyogenes* var. *aureus, Escherichia coli, Streptococcus pyogenes, Streptococcus faecalis,* and *Pseudomonas aeruginosa. Streptococcus faecalis* was not inhibited by the sulfonamides in the concentration used nor did the concentration of sulfabenzamide inhibit *P. aeruginosa. Escherichia intermedium, Proteus vulgaris,* and a species of Salmonella were isolated and identified from the feces of a scouring calf and tested *in vitro* against the sulfonamide derivatives. The sulfonamides were effective against *E. intermedium* and *P. vulgaris.* The species of Salmonella was not inhibited by N'butyryl sulfanilamide, sulfabenzamide, sodium sulfacetamide, and phthalylsulfacetamide in the amount used.—[*Warren N. Dannenburg and J. R. Harris: In Vitro Testing of Sulfonamides Against Known Microorganisms and Those Isolated from a Scouring Calf. Am. J. Vet. Res., 14, (1953):* 26-27.]

FOREIGN ABSTRACTS

Deep-Freezing of Semen

The discovery that glycerol would prevent hemolysis of red blood corpuscles after freezing led to investigations of its effect on other living cells. As viability is readily detected in spermatozoa because of their motility, it was obviously suited to investigation of this nature.

The semen is examined microscopically and diluted to half of the final dilution with a mixture of citrate buffer and egg yolk in equal proportions. The mixture is then cooled to + 5 C. and left at this temperature for about six hours. An equal volume of 20 per cent glycerol in citrate buffer previously cooled to + 5 C. is now slowly but thoroughly mixed with the semen. It is then left in the refrigerator for about eighteen hours to allow the glycerol to penetrate the semen and is then divided in single doses, in glass ampules, taking care that the temperature of + 5 C. is maintained.

This can be done easily by ampuling in an ice water bath. After sealing in the flame, the ampules are transferred to an alcohol bath also at + 5 C., the temperature being controlled by the

addition of solid carbon dioxide. A large thermos container is usually used as the alcohol bath in order to reduce wastage of CO_2 during cooling. The temperature of the bath is now reduced slowly by adding lumps of CO_2, taking about twenty-five minutes to reach —15 C., at which temperature the semen mixture is usually frozen solid. Once this point is reached, the CO_2 should be added much more rapidly to obtain a fairly rapid fall in temperature, reaching —79 C. in about forty-five minutes.

Once at this temperature, the ampules are transferred to their permanent container, a heavily insulated box containing trays of alcohol at —79 C. Bull semen stored in this way for a year still shows good activity on thawing. Pregnancies have been obtained with semen 7 months old, which is the oldest tried so far. The limit of successful storage at this temperature is not known, but it may well be many years or tens of years.

Experiments with semen of other species have been carried out but difficulties have been encountered, particularly with the boar and stallion. Boar sperm have however, been kept alive for five months at —79 C., although a large number die during the initial period of glycerol penetration. The same difficulties apply to the stallion but there is little doubt that, as time progresses, techniques will be developed for the successful storage of semen from these species also.—*[L. E. A. Rowson: The Deep Freezing of Semen. Zootechnia, 1, (Nov.-Dec., 1952): 7-8.]*—G.T.E.

Fate of Some Nitrogen Compounds in the Rumen

A definite synthesis of lysine was proved by McDonald and McNaught. Thomas Loosli found the ten essential amino acids in the rumen liquid of sheep fed urea as the only source of nitrogen.

Dinning found, in cases of urea intoxication, an increase in the ammonia content of the blood from 0 to 4 and 7 mg. per 100 cc. of blood. A certain dose of urea which, after oral administration would have caused death, was without any effect when administered intravenously.

When intoxication occurs, the rumen is paralyzed by the alkaline reaction resulting from the breakdown of urea, so ammonia, to reach the blood, must pass through the epithelium. Bancroft and Phillipson found that the absorption of anions and cations from the rumen depended upon the pH of liquid.

These data suggest the conclusion that bacterial fermentation in the rumen transforms food nitrogen to a typical protein which has a fairly constant amino acid content. This should explain why the biological value of protein in the rumen is usually around the 60 value. The small variation found in the different samples is probably due to a different proportion of all undigested food particles in the samples.

The biological value of proteins will also depend on the amount digested in the rumen. Undoubtedly, the manner of administration of the urea will play an important role (1) because this will determine whether it goes into the rumen or into the abomasum where there is no bacterial fermentation. On the other hand, the physical consistency of the food may play an important role. Further experiments are being conducted to determine the effect of these factors.—*[J. H. Bouckaert, W. Oyaert: Fate of Some Nitrogen Compounds in the Rumen. Veterinary College Ghent (Belgium), (1952): 21-28]*—G.T.E.

BOOKS AND REPORTS

Building America's Health

The first of five volumes comprising the report of the President's Commission on the Health Needs of the Nation was transmitted to the Congress by President Truman on Jan. 9, 1953. The first volume presents the Commission's findings and recommendations. The subsequent volumes II, III, IV, and V, comprising over 1,500 pages, are on the following subjects: Volume II—America's Health Status, Needs and Resources—outlines the diversified picture of health needs, facilities, and resources as presented to the Commission. Volume III is largely a statistical appendix supporting Volume II and the recommendations and findings of Volume I. Volume IV—Financing a Health Program for America—is, as the title suggests, a discussion of how the health needs of the nation can be financed. Volume V—The People Speak—is a compilation of excerpts from the regional hearings held in Philadelphia, Dallas, Raleigh, Minneapolis, St. Louis, Detroit, Cleveland, and San Francisco, at which 400 witnesses appeared. The official transcripts of the regional hearings total 3,000 pages or 600,000 words.

The report has been labelled by the *Journal of the American Medical Association* as "creeping socialism" (*see J. Am. M. A.*, March 21, 1953: 1003). This report was discussed for two days at the annual meeting of the National Health Council, March 18-19, 1953, in New York City. It was obvious that there is a wide difference of opinion in regard to it. Organized medicine does not believe that the report presents a factual picture of the health needs of the nation. They admit that there are some minor deficiencies, but that the level of medical service in the United States is far above that of any other land. Members of the Commission take the view that, as long as there are any persons without the best medical care, our health services are not as good as they should be. They admit that the total expense of complete health services might approximate $4 billion annually. But, as Mr. Chester I. Barnard, vice-chairman of the Commission, said, "It will be cheaper to do than to not do it. We can't afford not to spend this money for health services."

There are wide differences of opinion in regard to the number of physicians, the number of additional medical schools required to supply physi-

cians and, most of all, as to how the health and medical services can best be financed. Even members of the Commission were not in agreement on these issues.

There are few references to veterinary medicine in the report. There is a short statement in Volume II, p. 178, relative to veterinarians and some statistical data on pp. 226-227 of Volume III. Veterinarians are dealt with under the general heading of paramedical workers.

The report brings together a tremendous amount of material relative to the health needs of the nation. No doubt, much of the material can be questioned and will be. Certainly, no report of this nature can be infallible but it does present a world of information on the subject of health never before compiled.—[*Building America's Health. A Report to the President by the President's Commission on the Health Needs of the Nation. For sale by the Superintendent of Documents, U.S. Government Printing Office, Washington 25, D.C. Price not given.*]

A Veterinary Handbook for Cattlemen

From the foreword through page 266 of this book, the author has portrayed the practice of veterinary science as a mediocre art, simple enough to be practiced by the laity. The reviewer wonders if the author actually believes the excuses given in the foreword to be valid, or are they an attempt to clear his conscience for the economic loss his "handbook" could cause the livestock industry. Many of the recommendations are strictly matters of opinion and in our observation and experience have given disastrous results when tried by the laity.

In the chapter on practical pointers, the topics —some of which would lend themselves well to a discussion from the management and husbandry standpoint—are poorly and sketchily considered. An owner following the instructions, as given, will sooner or later cause injury or infection to himself or the patient. The discussions on cud transplanting, pregnancy examinations, and delivery of calves are glaring examples.

Chapter 2, "From the Veterinarian's Standpoint," would have been more properly titled "A Veterinarian's Opinion." The author attempts to instruct the owner when to call a veterinarian. The reasons are based on his opinion. It is evident that the author does not have the same professional relationship with his clientele which many successful veterinarians endeavor to maintain. Often the decision about whether a call is necessary can be quickly decided by a phone call or a trip to the office.

How the author can write the paragraphs under the title of "Importance of Diagnosis"—if he actually believes the statements he makes—and still write a handbook such as this is beyond the comprehension of the reviewers.

The title of the book is "A Veterinary Handbook for Cattlemen," yet in it are the statements: "No matter how much he knows or can do, a man is still a poor veterinarian if he is dirty"; and a few lines later, "In order to prevent infection and spreading disease the following 'don'ts' are suggested in relation to veterinary activities" (presumably the veterinary activities of the owner). It is folly for the author to assume that the don'ts and do's listed here and there in the handbook will prepare a layman to diagnose and relieve either medically or surgically the various pathological processes resulting from numerous diseases.

The author has failed to furnish a bibliography or any specific source of the information given in the disease sections of the book. About three or four times he made reference to a college or association in lieu of a bibliography.

The practice of instructing laymen to give medicine in such dosage as a pint of sulfa, 5 cc. of stilbestrol, 3 ounces of phenothiazine, etc., without stating specific concentrations is a very dangerous practice.

In conclusion, we can't help but wonder whether the intent of the author was to make profit for cattlemen, the veterinary profession, or himself by publishing this handbook.—[*A Veterinary Handbook for Cattlemen. By J. W. Bailey. 266 pages. Illustrated. The Webb Publishing Company, Itasca Press, 55 East 10th Street, St. Paul 2, Minn.* Price $5.00.]—V. L. THARP and H. E. AMSTUTZ.

Danish Veterinary Ex Libris

Overdyrlaege Will W. Petersen, Frederikssund, has prepared what is essentially a monograph on his hobby of designing bookplates for Danish veterinarians. There is a brief historical account of the subject with description and figures of some early bookplates. The significance of certain symbols from mythology is discussed, such as the Staff of Aesculapius which is commonly incorporated into the bookplates. Coiled serpents, the unicorn, sphinx, and antique lamps are frequently used. One plate depicts the well-known story of Androcles removing a thorn from the lion's foot.

The author has prepared for his colleagues many plates showing coiled serpents around horseshoes, staffs, or lamps. Several indicate the special interest of the book owner by including a microscope in the plate. One plate presents a serpent coiled around a syringe placed over a horseshoe. The author prepared bookplates for several departments of the Royal Veterinary School. An example is that of the pathological anatomy library, which has two serpents coiled around two crossed microscope tubes, and a scalpel on either side. It is apparent that Dr. Petersen is an authority on bookplates and that he has contributed greatly to this avocation among veterinarians.—[*Danske Dyrlaegeexlibris (Danish Veterinary Ex Libris). By Will W. Petersen. Reprinted from Dansk Veterinaerhistorisk Aarbog, 1950. 63 pages. 70 figures. Central-Trykkeriet, Nakskov, 1950. Price not given.*]—A.G.K.

THE NEWS

Ninetieth Annual Meeting of the AVMA

Toronto — July 20-23, 1953

Convention Entertainment Includes a Ball Game and Tea in a Castle

What Visitors to Canada Should Know

The Local Committee on Arrangements for the Nineteenth Annual AVMA Meeting have practically completed arrangements for entertaining the veterinarians and their wives who register for the 1953 meeting in Toronto on July 20-23.

Monday evening's entertainment will include a baseball game between the Toronto Mapleleafs and the Montreal Royals. Not only are these two of the best teams in the International League but the rivalry between the teams is intense. In addition, the management of the Toronto team, known for its attendance-stimulating activities, promises a "big" evening of entertainment for AVMA convention delegates and their families.

Wednesday evening will be the time for the traditional alumni dinners and the president's reception and dance. Because of the outstanding facilities in the Royal York Hotel, it is expected that all alumni groups can be served in the headquarters hotel. The reception and dance will be held at the Palace Pier, a beautiful, lakeside dancing pavilion. In addition to dancing, outstanding entertainment will be featured that evening at the Palace Pier.

Women's Tea to Be at the Casa Loma

The AVMA women will have tea in the only castle in North America. The authentic and original Casa Loma (see picture) is one of the most unique tourist attractions in Toronto. Costing $1,500,000, it was built by Sir Henry M. Pellatt over a three-year period and was finished in 1914. The fence around the estate, located on the summit of a hill, was erected at a cost of $250,000 by Scottish masons imported to construct it. The lavishness of the castle is demonstrated by the doors of the conservatory which cost $12,000 a pair, and the hand carving in the drawing room, which is valued at over $30,000. The women will have an opportunity to tour the castle and stroll around the beautiful grounds during the tea and reception.

The annual women's luncheon will be held at the famous Stoodleigh restaurant at the Canadian

Toronto, after dark. Toronto is the 1953 AVMA Convention City.

National Exhibition, another noteworthy tourist attraction that provides unequaled facilities for serving and entertaining the 800 women expected to register.

Between the gala entertainment features planned especially for the women and those to which they will accompany their husbands, will be scheduled the Women's Auxiliary business meetings. The meeting of the Auxiliary house of representatives is set for Tuesday, July 21, and their annual meeting is scheduled for Wednesday July 22.

Teenagers Will Be Entertained Too

The committee planning the entertainment for the teenagers has arranged for a "mixer" on Monday, July 20 (while the ladies are attending the tea and reception), and the tours on Tuesday and Wednesday which will include museums and the Casa Loma. There will also be a beach party on Wednesday afternoon, plus the entertainment scheduled for the adults on Monday and Wednesday evenings.

AVMA Golf Tournament Scheduled for Monday Afternoon

The beautiful Scarboro Golf and Country Club in Toronto will be the scene of the sixth AVMA golf tournament to be held in conjunction with the 1953 annual meeting on Monday afternoon, July 20. Contestants vying for the prizes and trophies to be awarded to the winners of the six divisions will begin teeing-off at 1:30 p.m. They are certain to find the Scarboro course challenging and in perfect condition, since the Canadian open tournament will also be played at this club in 1953.

The six divisions for which prizes and trophies will be awarded are (1) state or provincial two-man team championship; (2) individual champion or medalist (low gross score); (3) exhibitors' division; (4) students' division; (5) low net score; and (6) most honest golfer (booby prize). For all divisions except the two-man team championship and the medalist, an automatic handicap system will be used so that all golfers have an equal chance to win prizes.

Participants will leave the Royal York Hotel by bus at 12:30 p.m. Transportation from the club will also be furnished for those desiring it. The trophies and prizes will be awarded at the president's dance on Wednesday evening, July 22.

Entries will be accepted up to tee-off time at the registration desk and at the course. Advance designation of two-man state and provincial teams is required. Advance entries should be sent to the AVMA office, 600 S. Michigan Ave., Chicago 5, Ill., or to Dr. J. J. Richardson, 1545 Avenue Road, Toronto 12, Ont., who is chairman of the Golf Tournament Committee.

Dr. J. H. Ballantyne Appointed to Local Committee

Following the death of Dr. V. R. Brown which was reported in the April JOURNAL (p. 341), Dr.

View of Casa Loma, the "dream castle" of Sir Henry Pellatt, which is a bit of the old world in a new world setting. It is open for inspection of visiting delegates.

J. H. Ballantyne of the Ontario Veterinary College staff at Guelph was named to take over as chairman of the Committee on Meeting Rooms and Equipment of the Committee on Local Arrangements.

What Visitors to Canada Should Know

The Toronto Convention and Tourist Association has furnished the following information which will be helpful to persons from the States who may be going to Canada for the first time or have not been there for some time.

Identification.—No passport is required for U. S. visitors; there is no entry fee or tax. Travelers returning to the States should be prepared with proof of identity and place of residence (driver's license, car license, or birth certificate will do). Naturalized citizens of the United States should carry their certificates, and non-naturalized residents must have a re-entry permit from U. S. immigration officials.

Automobiles and Driving.—Automobiles may enter Canada for a period up to six months without payment of duty or deposit. On reporting to customs at port of entry, a permit is issued. State license cards should be carried. On leaving Canada, a car must be cleared through the Canadian customs.

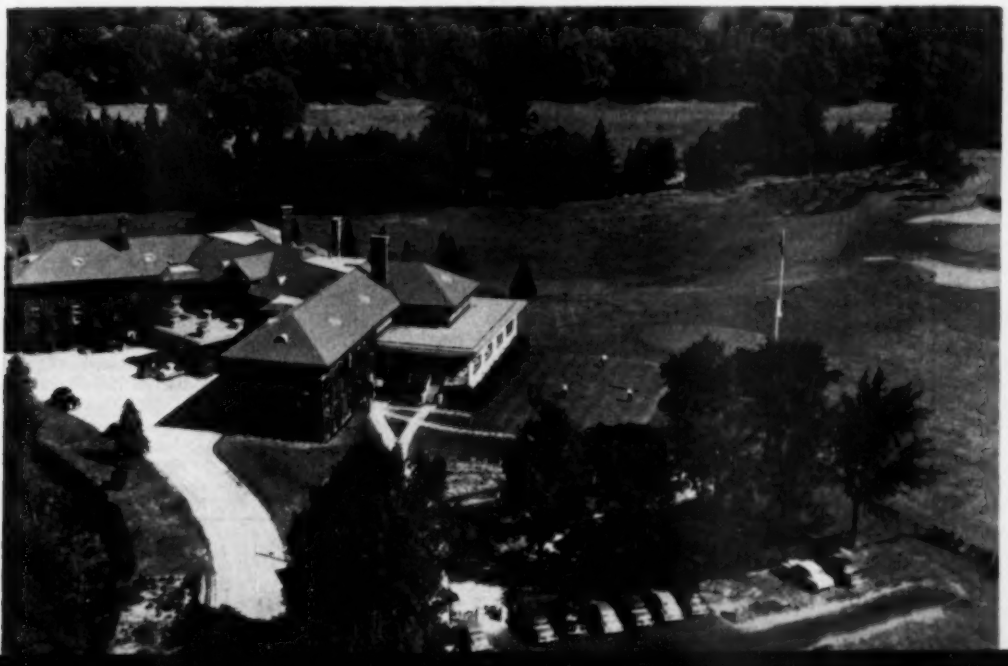
Highway regulations in Ontario Province differ little from those in most states. Obey posted speed limits, direction signs, and other highway markers. If involved in an accident, do not leave the scene without police permission.

Hours of sale for gasoline vary in Ontario depending on local ordinances. In comparing prices, remember that 5 gallons (imperial measure) equal 6 U. S. gallons.

Sports Equipment.—Cameras, shotguns, fishing tackle, and all personal property for sports (except revolvers, pistols, and automatic guns) for use on vacation enter Canada free of duty and without difficulty. Such equipment should be reported to the customs officer on entry and checked out on leaving.

Canada's lakes and streams offer fishermen hours of relaxation and sport.

The beautiful Scarboro Golf and Country Club in Toronto where the AVMA golf tournment will be held Monday afternoon, July 20.



Dogs and Pets.—These animals enter as part of a tourist's outfit without deposit. Dogs must have a certificate of health and rabies vaccination within three months of time of entry.

Tobacco.—Fifty cigars, 200 cigarettes, and 2 pounds of tobacco may be entered duty free. Break the seals on packages and declare them to customs officer. Entry of one bottle of spirituous liquor is permitted.

Duty-Free Shopping.—A visitor from the States who has been in Canada forty-eight hours may take back, free of duty, articles aggregating up to $200 in value if they are of personal or household use and not intended for sale. This may be repeated every thirty-one days. If the period of absence from the U.S. totals thirteen days, an additional allowance of $300 duty-free importation may be made once every six months.

Family Exemptions.—When husband and wife, parents and children, or related members of a single household are traveling together, the duty-free exemptions may be grouped and allowance made without regard to individual ownership of imported items.

Make it easy for both the customs officer and yourself — have your purchases listed and attach sales slips to the list. Have things packed for easy inspection. Declare any gifts you have received and state how much you think they cost (fair market value). Exemption is lost on undeclared dutiable goods.

Hotel Reservations

The prospect of record attendance at the Toronto session emphasizes the necessity of early requests for accommodations. See and use hotel information and reservation blank on advertising p. 49.

Annual Meeting of Livestock Conservation, Inc.

The annual meeting of Livestock Conservation, Inc., was held in Chicago at the Stockyards Inn on Feb. 20, 1953. More than 150 men, representing all branches of the livestock industry interested in prevention of loss during meat production, attended the scientific sessions. The program stressed losses due to internal and external parasites and the bruising and crippling of animals in transit, and pointed up the campaign carried on through the press and radio to educate livestock handlers to this loss. A panel discussion, "Livestock Conservation Workshop," moderated by Robert J. Norrish, Armour Livestock Bureau, was featured on the WLS radio program, "Dinner Bell Time." The following groups were represented on this panel: extension groups, W. J. Wills, University of Illinois; livestock trucking, Eldon Miller, Eldon Miller, Inc.; railroads, John Lehew, Pennsylvania Railroad; markets, A. Z. Baker, American Stockyards Association; packers, L. I. Thompson, Rath Packing Company; and humane organizations, Mel Morse, American Humane Association.

One of the outstanding papers presented at the meeting was "Livestock Research Leads to Production Efficiency" by Brig. Gen. J. A. McCallam, president-elect of the AVMA. Other program speakers were W. A. Netsch,

Selective Service and Military Status of Nonveteran Graduates

Graduates from schools of veterinary medicine who are not in the Reserves must register with Selective Service within five days of graduation as *special* registrants under P.L. 779 (doctors draft law). This is required even though such graduates are already registered under the Universal Military Training and Service Act (the basic draft law).

Under the present doctors draft law, P.L. 779, the nonveteran graduates of veterinary medicine will become Priority III registrants and, as such, are not subject to call through P.L. 779, even if commissioned a reserve officer by the Army or Air Force, until Priority I and II registrants have been called. However, they are subject to induction under the basic draft act by Selective Service until 35 years of age. There are no "blanket" deferments of any group or profession. Deferments must be granted by local boards and on an individual basis.

The 1952 and 1953 graduates who apply for a commission *and immediate active duty* can be appointed as second lieutenants immediately after graduation. Under present regulations, *they cannot be appointed in a higher grade regardless of how long they wait before applying for a commission.*

The term "immediate active duty" usually means the reporting date will not be earlier than thirty days subsequent to the receipt of the application. If no vacancies exist, applicants may not be called for weeks or months.

Graduates who have completed the ROTC course can be appointed as second lieutenants without concurrent application for immediate active duty. They can not be called without their consent until Priority I and II registrants are exhausted. They may, while under 35 years of age, be called under the basic Selective Service Act. If they are, they can request immediate active duty and usually can be taken on active duty in their commissioned grade prior to induction.

president of Livestock Conservation, Inc.; Dr. J. R. Pickard, general manager; and H. H. Kildee, dean emeritus, Iowa State College.

s/W. E. LOGAN.

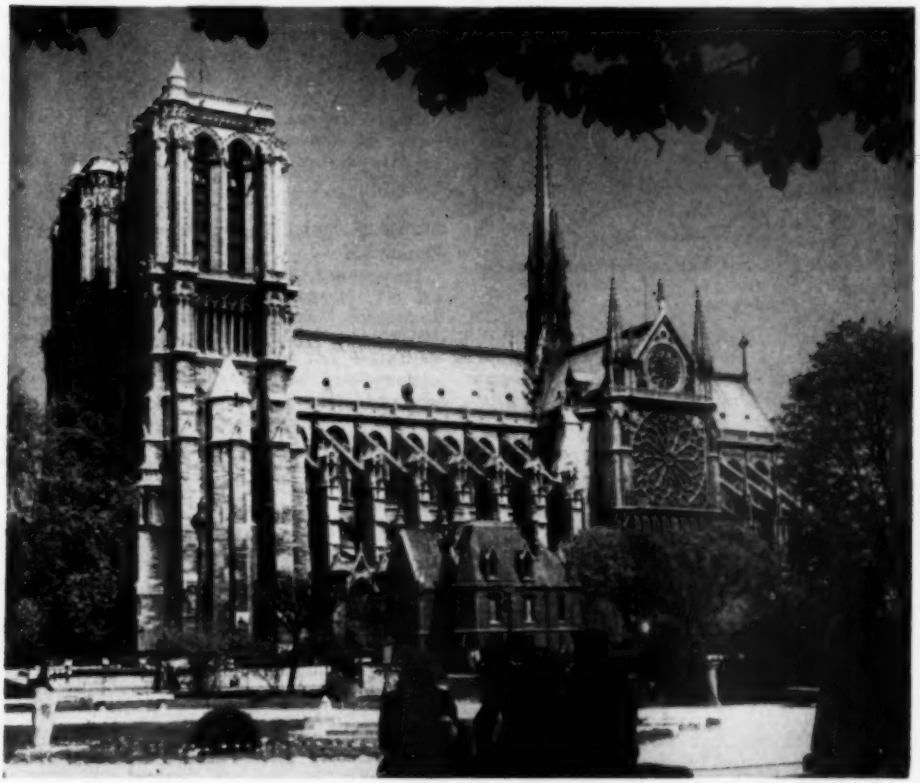
Time Growing Short for Making Tour Reservations to Stockholm Congress

There has been a good response to the tours offered by the U. S. Committee in connection with the Fifteenth International Veterinary Congress to be held in Stockholm, Sweden, Aug. 9-15, 1953. Although the time is growing short for acceptance of additional reservations, any veterinarians who are interested may still join one of the tours (*see* the JOURNAL, Sept., 1952, pp. 214-215, and March, 1953, pp. 240-241) if they will write *at once* to the AVMA office or, preferably, to Mr. Nelson M. Jost, Travel Service Bureau, 318 Harvard St., Brookline, Mass. These tours promise to be most enjoyable and the choice offered to visit various European countries on the different tours should meet any individual preferences.

Cornell Announces Course in Electron Microscopy

The annual Cornell Summer Laboratory Course in techniques and applications of the electron microscope will be given this summer from June 15 to June 27, 1953, by the laboratory of electron microscopy in the Department of Engineering Physics. The course, under the direction of Dr. Benjamin M. Siegel, will have Dr. James Hillier of the R.C.A. Laboratories, Princeton, N.J., and Dr. C. E. Hall of M.I.T., Cambridge, Mass., as guest lecturers this year.

The course is designed for those research workers, institutional and industrial, who have recently entered the field of electron microscopy or who are now planning to undertake research problems involving applications of this instrument. Further inquiries should be addressed to Dr. Benjamin M. Siegel, Department of Engineering Physics, Rockefeller Hall, Cornell University, Ithaca, N. Y.



—French National Tourist Office

Situated on a tiny island in the middle of the Seine River, Paris' Gothic masterpiece, Notre Dame, remains the world's best loved cathedral.

NEWS FROM WASHINGTON

Improved Classification for Federal Veterinarians

A letter received from Office of Personnel of the U.S. Department of Agriculture, just before going to press, reveals that the U.S. Civil Service Commission has submitted its decision in reply to the request from the U.S.D.A. for a beginning grade of GS-9 for veterinarians. The Commission's decision does not seem to be too clear, but seems to indicate a rejection of the U.S.D.A.'s recommendations. However, the letter from the U.S.D.A., from which the following is quoted, would indicate that considerable progress has been made if their interpretations are correct.

> We are planning, with the concurrence of the Bureau, to inform the Commission that we accept this decision in light of our interpretations of it. We will inform the Commission that our interpretations are: (1) that grade 7 is to be strictly a trainee grade; (2) that after a short (probably six months) orientation period, veterinarians automatically go to grade 9 on the basis of independent regulatory action involving veterinary medical judgment; and (3) that the specifications for the veterinary meat inspector, the veterinary virus-serum series, and the veterinary disease control series will be liberalized in the upper grades to permit a better promotion ladder to the grades 11, 12 and, to some extent, the grade 13 levels.

Dr. Clarkson Heads Vesicular Exanthema Program

Dr. M. R. Clarkson, deputy administrator of the Agricultural Research Administration of the U.S.D.A., was, on April 2, 1953, placed in charge of the Department's recently expanded program for eradication of vesicular exanthema.

Voluntary Pension Plan Legislation for Individuals Reintroduced

This legislation, known as the Reed-Keogh bill in the 82nd Congress, had the purpose of qualifying professional men and other self-employed individuals for the tax benefits of pension plans formerly available only to employed groups. The bill had a hearing before the House Ways and Means Committee in May, 1952, at which time certain amendments were incorporated, bringing it to its present form. In the change of administration, Representative Reed has become the chairman of the Ways and Means Committee and the bill has been reintroduced in the 83rd Congress as HR 10 and 11.

The purpose of the bill is to eliminate the unfair discrimination now existing against 10 to 12 million of self-employed persons not eligible to enjoy the tax-free benefits of present pension plans.

Related to this legislation is Senate Bill 1470 introduced by Senator Kefauver (D., Tenn.), which provides for voluntary coverage under the federal old-age and survivors insurance system for lawyers and doctors engaged in the practice of their professions. Specifically mentioned are physicians, lawyers, dentists, osteopaths, veterinarians, chiropractors, and optometrists.

Doctors Draft Legislation

Senate Bill S. 1531, introduced on April 1 by Senators Saltonstall (R., Mass.) and Hunt (D., Wyo.), which is legislation that would extend the essential provisions of the "Doctor Draft" Law (P.L. 779), has been referred to the Committee on Armed Services. Its title reads "a bill to amend the Universal Military Training and Service Act, as amended, so as to provide for special registration, classification, and induction of certain medical, dental, and allied specialist categories, and for other purposes."

Pertinent to this legislation is S. 1494 introduced on March 30 by Senator Potter (R., Mich.), which provides that time spent as a civilian internee during World War II shall be considered as active service in determining priority for induction into the Armed Forces of medical, dental, and allied specialists.

Status of First Lieutenancy and $100 Pay Bonus Bills

It is reported that the Department of the Army has not yet reported its recommendations to the Department of Defense on the bills (*see* the JOURNAL, April, p. 330) which would provide the grade of first lieutenant for veterinarians commissioned in the Armed Forces immediately after graduation.

Proposals for extension of incentive and hazardous duty special pay legislation have been under study by the so-called Strauss Commission. While a copy of the Commission's report is not yet available for study, it is understood that testimony to include veterinary officers was considered but that the Commission did not favor such inclusion because the small number of such personnel required by the Armed Forces does not indicate that special inducement is needed.

It is said that the Commission opposes extra pay as a differential for alleged loss of civilian earnings for any professional group, since this would be a preferential and undemocratic consideration. The Commission is understood to have recommended that special pay for physicians and dentists be limited to regular and reserve officers who volunteer and are accepted for extended active duty beyond that required by Public Law 779 or subsequent similar legislation.

Dr. Allam Appointed Dean at University of Pennsylvania

The appointment of Dr. Mark W. Allam as dean of the School of Veterinary Medicine, University of Pennsylvania, was announced on Feb. 1, 1953.

Dr. Allam had been appointed acting dean

Dr. Mark A. Allam

of the veterinary school on April 22, 1952, to fill the vacancy created by the death of Dr. Raymond A. Kelser.

Following Dr. Allam's graduation from the University of Pennsylvania, School of Veterinary Medicine, in 1932, he was engaged in general veterinary practice at Media, Pa., for thirteen years. In 1945, he was appointed as assistant professor of veterinary surgery at the School of Veterinary Medicine and was made professor of veterinary surgery July 1, 1951.

Since Dr. Allam joined the faculty of the veterinary school, he has been actively engaged in a number of research projects. Collaborating with the Harrison Department of Surgical Research, School of Medicine, and the Peripheral Nerve Study Center, University of Pennsylvania Hospital, he carried on an extensive study of peripheral nerve regeneration. The results of this work led to improved methods of evaluating peripheral nerve injuries to animals. Under Dr. Allam's direction, a study of the use of gelatin in the treatment and prevention of shock was conducted.

Recently, Dr. Allam has been actively engaged in cancer research under a grant from the U. S. Public Health Service, studying the transplantability of canine malignant neoplasms. He recently reported on the use of Nile blue as an aid in identifying the malignant cell by differential staining.

At the present time, Dean Allam is conducting an active drive to make the University's New Bolton Center near Kennett Square one of the world's outstanding centers for research into the causes, treatment, and prevention of animal diseases.

Dr. Shope Made Honorary Member of American Board of Veterinary Public Health

Dr. Richard E. Shope of Kingston, N. J., a physician famous for his achievements in veterinary medicine, was made an honorary member of the American Board of Veterinary Public Health at the sixty-ninth annual meeting of the Veterinary Medical Association of New Jersey held at Newark on Feb. 5-6, 1953. A part of the Board's citation follows:

> Epidemiologist, virologist, physician, and veterinarian, he has served his country ably in peace and in war. He has successfully directed his knowledge toward the biological defense of the public's health and toward the stabilization of our livestock economy through the control of animal disease agents.
>
> Therefore, it is a signal honor to name Richard E. Shope an Honorary Fellow of the American Board of Veterinary Public Health, and to present to him this certificate of accomplishment.

Dr. Shope, who holds an honorary degree in veterinary medicine from the University of Utrecht, Holland, has had a notable career in veterinary medicine. During World War II, he served with the Navy in biological warfare research and won the Legion of Merit for directing the development of an improved vaccine

Dr. Richard E. Shope

against rinderpest. Dr. Shope is an authority in the field of zoönoses and is presently research virologist for the Rockefeller Institute for Medical Research, New York City. He was elected honorary member of the AVMA at the eighty-eighth annual meeting in Milwaukee.

s/FRANK A. TODD.

STUDENT CHAPTER ACTIVITIES

California Chapter.—The following officers served the University of California Student Chapter of the AVMA during the fall semester of the 1952-1953 school year: Bill Kortum, president; Ben Lundberg, president-elect; Jim Steere, vice-president; Larry Proctor, secretary; and Jack Tucker, treasurer. At the October 9 meeting, Bob Abbott reported on the meeting of the AVMA in Atlantic City. The following committees were appointed: ways and means, constitution and publications, and publicity.

Dr. R. W. Ormsbee of Stockton spoke on the role of the veterinarian in the prevention of disease and assisting in the management of the dairy herd, at the October 23 meeting. On November 13, **Dr. H. H. Groth**, San Mateo, gave some of the highlights from his extensive practice. At the meeting on December 11, it was decided to have the annual Christmas party for the children of the students and faculty, and A. C. Pier was appointed chairman of the committee. Ben Lundberg spoke in tribute to Dr. Traum and presented him with a briefcase as a farewell gift from the Chapter. **Dr. Robertson**, Madera, entertained the group with anecdotes and pictures of his experiences in Singapore.

On Jan. 8, 1953, the following officers were elected for the spring semester: Larry Proctor, president-elect; Sterling Rood, vice-president; Ben Dillon, secretary; and Chick Webster, treasurer. President Ben Lundberg appointed the following chairmen for the standing committees: Mart Silver, ways and means; Bill Riggs, constitution; Jim Bittle, publications. Gerry Petit introduced his brother, **Mr. Floyd Petit**, a Sacramento attorney, who spoke on legal problems of the veterinarian.

The attendance, by class for the first-semester meetings was:

Meeting	Senior	Junior	Soph.	Fresh.	Total
Oct. 9	36	25	18	29	108
Oct. 23	37	38	28	30	135
Nov. 13	43	42	13	22	120
Dec. 11	42	13	12	33	100
Jan. 8	40	40	32	7	119

Additional meetings were held on the fourth Thursday of each month at which pictures on veterinary subjects were shown.

The mid-winter conference of the California Veterinary Medical Association was held January 26-28 at the College. The students assisted in numerous ways as guides, coffee room attendants, etc., and also arranged meetings between practitioners and students regarding summer and graduate employment.

The social activities included the annual fall picnic given by the freshmen in September; the fall smoker at which the freshmen and faculty were introduced; and the Christmas party.

s/LAWRENCE M. PROCTOR, JR., *Secretary.*

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Michigan Chapter.—The following is a summary of the meetings and activities of the Michigan State College Student Chapter of the AVMA for the winter term of the 1952-1953 school year.

On January 15, a motion picture, "Large Game Hunting in Alaska," was shown after the regular business meeting. At the January 22 meeting, the four classes put on a variety show for the annual postgraduate conference. **Dr. F. Pierce**, of Coldwater, discussed setting up and conducting a practice, at the January 29 meeting.

At the meeting on February 12, **Dr. John Patton** explained his duties as veterinarian with the foreign service in the Middle and Far East. The medicine ball, main social event of the year for the veterinary and medical technology students, was held February 12. On February 26, **Dr. Frank Booth** of Elkhart, Ind., gave an interesting talk on the aspects of a veterinary practice.

On March 12, **Dr. Wayne H. Riser**, Skokie, Ill., gave helpful pointers on setting up a successful veterinary practice. The following officers were elected: Dr. R. D. Barner, faculty advisor; Arnold Hentschl, president-elect; Dick Lindsey, vice-president; Carol Beitzel, secretary; Joe Sewell, treasurer; and George Cruikshank, sergeant at arms.

s/CAROL BEITZEL, *Secretary.*

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Missouri Chapter.—The regular meeting of the Missouri Student Chapter of the AVMA was held March 9, 1953, at the clinic. **Mr. Lewis Harris** from Norden Laboratories, Lincoln, Neb., was the guest speaker. He gave an interesting discussion on "The Veterinarian on the Witness Stand." At the business meeting, it was announced that the freshman class was the winner of the basketball tournament. The four classes in the School of Veterinary Medicine participated in the tournament which was held March 6.

s/JACK O. PARKER, *Secretary.*

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Pennsylvania Chapter.—The following is a report of the activities of the University of Pennsylvania Student Chapter of the AVMA for the fall term of the 1952-1953 school year.

On October 1, **Mr. Miles Horst**, state secretary of agriculture, spoke on the functions of the Department of Agriculture, the future of the livestock industry, and the increased de-

pendence of many businesses upon the maintenance of healthy animals.

At the October 15 meeting, **Dr. Mark Allam,** acting dean, presented the honors for the session ending June, 1952, as follows: 1914 Class Medal, Millard Mershon; Arthur D. Goldhaft Prize ($50), Fred Hagerty; Borden Award ($300), William Downey; Anatomy Prize, class of 1916, to Doris J. Sell. The speakers of the evening were **Mr. Melhorn,** assistant president of the Hanover Shoe Factory, Hanover, and **Dr. A. W. Patterson, Jr.,** who is employed by the Hanover Shoe Farms.

On October 29, Dr. Donald G. Lee was presented a gold key by the Chapter in appreciation of the guidance he has given the Chapter as its faculty advisor. **Dr. J. O. Almquist,** professor of animal industry at the Pennsylvania State College, discussed bovine reproduction. **Dr. W. C. Glenney,** Ardmore, gave an illustrated talk on large animal surgery at the November 19 meeting.

Dr. G. B. Schnelle, chief of staff at the Angell Memorial Hospital, Boston, was the guest speaker at the December 10 meeting. He described, with illustrations, some of the cases presented at that hospital during the past few years. **Dr. W. L. Boyd,** president of the AVMA, spoke at the January 7 meeting on trends in veterinary medical education. On January 14, **Mr. G. P. Williams,** a lawyer, was guest speaker. The following officers were elected; Amos Hollister, president; James Edelblut, president-elect; Fred Hagerty, secretary; and William Anderson, treasurer.

S/DAVID INGRAHAM, *Retiring Secretary.*

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Washington Chapter.—At the January 19 meeting of the Washington State College Student Chapter of the AVMA, the following officers were elected: David Urie, president-elect; James Dow, vice-president; Carolyn Hall, secretary; James Jackson, treasurer; Bob Lott, athletic chairman; and Frank Lindeke, publicity chairman.

Dr. Raymond E. Watts was chosen faculty advisor to the student chapter. Dr. Watts has been a practitioner in Wisconsin and in Salt Lake City, Utah. He is currently teaching surgery, obstetrics, and large animal clinics at the Washington State College School of Veterinary Medicine.

At the meeting on February 17, **Dr. Joseph L. Ellis,** executive board member of the Washington State Veterinary Medical Association, discussed the aims and importance of membership in this organization and in the AVMA. An informal discussion followed during which Dr. Ellis answered many questions pertaining to small animal practice.

S/FRANK LINDEKE, *Publicity Chairman.*

WOMEN'S AUXILIARY

Dear Ladies of the AVMA:

Here is a brief note on some of the activities being arranged for you during the Convention in Toronto.

On Monday afternoon, July 20, there will be a reception and tea at picturesque Casa Loma, affording an opportunity to renew old and make new acquaintances. The site for the tea is the late Sir Henry Pellatt's Tudor castle situated on a high escarpment overlooking the city. We are fortunate in that a tour of this landmark has been arranged following the tea.

The Stoodleigh restaurant in the Canadian National Exhibition Park on the Lakeshore Boulevard will be the setting for Tuesday's luncheon. A talk, with movies, by an outstanding authority on English china will be given after the luncheon. Much of the china shown may be found in shops throughout the city.

The first part of Wednesday evening, July 22, is to be given over to alumni dinners at the Royal York Hotel. Following the dinners, a cool drive along the Lakeshore Boulevard will find us at the mouth of the Humber River for a dance and cabaret at the Palace Pier Ballroom.

Don't hesitate to bring the teenagers, as Mrs. LeGard and her committee have arranged some splendid entertainment, including interesting tours, a beach party, swimming, and other entertainment.

Sorry to disappoint you if you were coming to Canada for winter sports. Our July temperature mean for the past ten years is 79 F., with comfortably cool evenings, so you may leave your fur jackets at home.

As for clothing, we would suggest you bring a light suit — our temperature changes. Summer suits similar to the Salta suits you have in the States would be ideal. Dresses could be of sheer or light weight pure silk, rajah, or cotton. Lace will travel anywhere and come out looking fresh. Be sure to bring a light wrap — sometimes our evenings are cool. The stoles this year are a blessing.

We hope this little note on the highlights of our activities to date will be informative. As you can see, there is much time for free-lancing, independent tours, shopping or visiting, whatever your bent. We feel certain you will not lack for things to do while in Toronto.

WOMEN'S ACTIVITIES COMMITTEE
MRS. T. W. HAWKE, *General Chairman;* MRS. S. BODENDISTEL, *Co-Vice Chairman;* MISS EMILY MUMFORD, *Co-Vice Chairman.*

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Missouri Auxiliary.—The Women's Auxiliary to the Missouri Veterinary Medical Association

met in the Hotel Jefferson in St. Louis on Feb. 23-24, 1953. During the business session, the following officers were elected: Mrs. Cecil Elder, Columbia, president; Mrs. S. W. Haigler, St. Louis, first vice-president; Mrs. L. E. Bodenweiser, Washington, second vice-president; Mrs. J. K. Farrell, Boonville, secretary; and Mrs. Glen Dunlap, Kansas City, treasurer.

The social program included a luncheon in the Ivory Room of the Hotel Jefferson, brunch, a theater party, and the annual banquet.

s/MRS. J. K. FARRELL, *Secretary.*

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Vermont Auxiliary.—The Women's Auxiliary to the Vermont Veterinary Medical Association met in the Hotel Vermont in Burlington on Feb. 7, 1953. The following officers were elected at the business meeting: Mrs. Norman H. Cox, Rutland, president; and Mrs. W. B. Durrell, Shelburne, secretary-treasurer.

s/MRS. W. B. DURRELL, *Secretary.*

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Mrs. A. E. Bott Honored.—Mrs. Ethlyn W. Bott, wife of Dr. A. E. Bott, Belleville, was recently voted Illinois "Mother of the Year" for 1953, which qualifies her for consideration for the national award voted in New York early in May. Mrs. Bott is well known in veterinary circles as a past-president of the AVMA Women's Auxiliary and president of the International Women's Auxiliary to the Veterinary Profession.

APPLICATIONS

Applicants — Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., the names of applicants residing within the jurisdictional limits of the constituent associations shall be published once in the JOURNAL.

The following applicants have been certified as members of the constituent association that has jurisdiction over the area in which the applicant resides. This certification was made by the secretary of the constituent association in accordance with Section 2, Article X, of the Administrative By-Laws.

BEMIS, CLYDE M.
48-B No. Fairway, Pullman, Wash.
D.V.M., Washington State College, 1947.

CAREY, WALTER E.
Good Thunder, Minn.
D.V.M., Chicago Veterinary College, 1920.

COX, NORMAN H.
67 Field Ave., Rutland, Vt.
D.V.M., Ontario Veterinary College, 1929.

CRONIN, MICHAEL THOMAS I.
Box 530, Warrenton, Va.
M.R.C.V.S., Veterinary College of Ireland, 1945.

DE LA PENA, AUGUSTO A.
Calle 13, No. 1202 Apart. 5, Vedado, La Habana, Cuba.
D.V.M., University of Havana, 1950.

JOHNSON, LEROY E.
Veterinary Clinic, Department of Surgery, Ohio State University, Columbus, Ohio.
D.V.M., Ohio State University, 1942.

JORDAN, EDWARD M.
Department of Small Surgery and Medicine, School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala.
D.V.M., Alabama Polytechnic Institute, 1943.

LIVINGSTON, JOHN M.
Rt. 2, Highway 76, Newberry, S. Car.
D.V.M., Alabama Polytechnic Institute, 1948.

MARSHALL, ROBERT J.
Soldiers Grove, Wis.
D.V.M., Ontario Veterinary College, 1941.

MEARS, WILLIAM A.
Worthington Veterinary Hospital, Worthington, Minn.
D.V.M., Ontario Veterinary College, 1951.

MOORE, JOHN H.
656 Concord St., St. Paul 7, Minn.
D.V.M., Cornell University, 1915.

NILES, CLIFTON A.
Freeborn St., P. O. Box 321, St. Albans, Vt.
B.V.Sc., Ontario Veterinary College, 1938.

PETERS, DONALD F.
629 Lafayette St., Somerset, Mass.
V.M.D., University of Pennsylvania, 1946.

PETERSON, WALTER N.
R.F.D. No. 1, Stillwater, Minn.
D.V.M., Iowa State College, 1930.

PHILLIPS, PAUL E.
1509 N. Kickapoo St., Shawnee, Okla.
D.V.M., Kansas State College, 1940.

SCHICK, HERMAN J.
203 N. Prospect, Austin, Minn.
D.V.M., Colorado A. & M. College, 1932.

SCHOOLEY, MAURICE
3930 Lawn Ave., Western Springs, Ill.
D.V.M., Kansas State College, 1937.

WRIGHT, GLENN
Box 100, Capleville, Tenn.
D.V.M., Alabama Polytechnic Institute, 1936.

ZIEGENBEIN, FRANK E.
Nebraska City, Neb.
D.V.M., Chicago Veterinary College, 1920.

ZOERB, EDGAR F.
Kiel, Wis.
D.V.M., Ohio State University, 1951.

Applicants — Not Members of Constituent Associations

In accordance with paragraph (b) of Section 2, Article X, of the Administrative By-Laws, as revised at the annual meeting of the House of Representatives, Aug. 18, 1951, in Milwaukee, Wis., notice of all applications from applicants residing outside of the jurisdictional limits of the constituent associations, and members of the Armed Forces, shall be published in the JOURNAL for two successive months. The first notice shall give the applicant's full

name, school, and year of graduation, post office address, and the names of his endorsers.

First Listing

BEADNER, HAROLD F.
1205 Birk Ave., Ann Arbor, Mich.
D.V.M., Washington State College, 1939.
Vouchers: W. O. Kester and J. B. Couch.

DAY, ROBERT W.
Headquarters, Flying Training Air Force, Office of the Air Surgeon, Waco, Texas.
D.V.M., Ohio State University, 1934.
Vouchers: W. Kester and J. Couch.

GORMAN, HARRY A.
1538 Mesa Ave., Broadmoor, Colorado Springs, Colo.
D.V.M., Colorado A. & M. College, 1939.
Vouchers: J. W. Harrison and L. L. Eldred.

NOVICH, SAMUEL D.
c/o Dr. N. R. Matthews, 384 Gramatan Ave., Mt. Vernon, N. Y.
D.V.M., Royal Copenhagen Veterinary and Agricultural College, 1953.
Vouchers: N. O. Rasbech and J. G. Hardenbergh.

Second Listing

YOST, DONALD H.
Armed Forces Institute of Pathology, 7th St. & Independence Ave., S.W., Washington 25, D. C.

U. S. GOVERNMENT

Veterinary Personnel Changes.—The following changes in the force of veterinarians in the U. S. Bureau of Animal Industry are reported as of March 20, 1953.

NEW APPOINTMENTS
Bert R. Allen, Jr., Indianapolis, Ind.
Fred Barta, Omaha, Neb.
Allan J. Boddy, Portland, Ore.
George W. Gillie, Fort Wayne, Ind.
Bob M. Mathis, Phoenix, Ariz.
Thomas J. Matthews, Madison, Wis.
LeRoy Noyes, Fayetteville, Ark.
Walker S. Poston, San Francisco, Calif.
Edward T. Printz, Ottumwa, Iowa.
Tihomir Radivojevic, Milwaukee, Wis.
Morgan W. Tempero, Ottumwa, Iowa.
Donald E. Watt, Phoenix, Ariz.

SEPARATED (No return from military furlough)
Herbert L. Armstrong, Baltimore, Md.

DEATH
John Van Enenaam, Houston, Texas.

RESIGNATIONS
Lucius N. Butler, Phoenix, Ariz.
Hamilton M. Edmiston, Suffolk, Va.
Elwood E. Everson, Mason City, Iowa.
Dexter T. Gabbard, Atlanta, Ga.
Dennis R. Hranitzky, Olympia, Wash.
Newton A. McCosh, Denver, Colo.
Robert C. Mehan, Harrisburg, Pa.
Moral R. Osborn, Fort Worth, Texas.
Roland G. Van Sant, Los Angeles, Calif.
Fred J. Wigderson, New York, N. Y.

RETIREMENTS
John F. Creedon, Baltimore, Md.
Louis J. Donnelly, Olympia, Wash.
Everett P. Maitland, Jefferson City, Mo.
Jesse E. Peterman, Lincoln, Neb.

TRANSFERS
James C. Bolton, from Kansas City, Kan., to Omaha, Neb.
Carl E. Boyd, from Atlanta, Ga., to Boston, Mass.
Fred E. Castro, from Columbus, Ohio, to Kansas City, Kan.
Rush M. Johnson, from Des Moines, Iowa, to Lincoln, Neb.
Edwin M. Land, from Baltimore, Md., to Philadelphia, Pa.
William J. Minor, from Waterloo, Iowa, to Chicago, Ill.
William M. Moulton, from St. Paul, Minn., to Bismarck, N. Dak.
Gustav H. Mydland, from Topeka, Kan., to Ogdensburg, N. Y.
Frank A. Peak, from Mexico City, Mex., to Mason City, Iowa.
Bernard T. Sawyer, from Omaha, Neb., to Kansas City, Kan.
Jorge S. Simon, from San Francisco, Calif., to Omaha, Neb.
B. Conwell Swindle, from Jacksonville, Fla., to Washington, D. C.
Charles W. Woods, from Dayton, Ohio, to San Francisco, Calif.

AMONG THE STATES AND PROVINCES

Alabama

Dr. Patterson Leaves Tuskegee.—Dr. F. D. Patterson recently resigned as president of Tuskegee Institute at Tuskegee, Ala., to become educational director of the Phelps-Stokes Fund in New York City. Dr. Patterson, a native of Texas, received his degree in veterinary medicine at Iowa State College in 1923, joined the faculty at Tuskegee as head of the veterinary division in 1928, became director of the school of agriculture in 1933, and president of the Institute in 1938.

Tuskegee Institute, an outstanding school for Negroes, was founded in 1881 with Booker T. Washington as its first principal. Dr. Patterson, the school's third head, in his fifteen-year term had strengthened and expanded the school. One of his outstanding achievements was the establishment of a college of veterinary medicine which opened its doors in September, 1945, and graduated its first class in June, 1949.

In his new position, Dr. Patterson will be able to continue his relationship with the United Negro College Fund, of which he is founder and president, and which has raised over $20 million for educational purposes since 1945.

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Leptospirosis in Alabama.—In 1950, leptospirosis (*Leptospira pomona*) was diagnosed, by serum-agglutination tests, in people who had been swimming in a creek possibly infected by sick swine. Therefore, tests were made in 1951 of

blood samples of 353 cows and 38 hogs from 62 herds in 26 counties. Although leptospirosis had not been suspected in any animals in the state, 14 cows reacted at dilutions of 200 or over. One hog and 14 other cows reacted at 1:100.—*The Auburn Vet. Fall, 1952.*

Colorado

Conference for Veterinarians.—The fourteenth annual conference for veterinarians, sponsored by the School of Veterinary Medicine at Colorado A. & M. College, was held at Fort Collins on Feb. 16-18, 1953.

The following guest speakers presented papers during the scientific session of the program: **Drs. Kenneth V. Bolton,** Rocky Ford; **A. H. Craige, Jr.,** Pitman-Moore Co., Indianapolis, Ind.; **Lewis E. Harris,** Norden Laboratories, Lincoln, Neb.; **Roger V. Jessup,** Glendale, Calif.; **William G. Magrane,** Mishawaka, Ind.; **Brig. Gen J. A. McCallam,** Washington, D. C., president-elect of the AVMA; **James L. Palotay,** Greeley; **Paul D. Pattridge,** Golden; **W. D. Pounden,** Ohio Agricultural Experiment Station, Wooster; **W. F. Powers** (M.D.), Fort Collins; and **V. D. Stauffer,** Arvada.

Members of the staff of Colorado A. & M. College who participated in the program were: **Drs. Floyd Cross,** dean, **Lynn A. Griner, R. Scott Jackson, Rue Jensen, R. H. Jourdan, W. E. Morgan, F. J. Milne, A .D. Rankin, R. H. Udall,** and **L. K. Wayt.**

s/FLOYD CROSS, *Dean.*

Delaware

Dr. Creedon Honored by Cattlemen.—Dr. John F. Creedon was the guest of honor at the eighth annual luncheon meeting of the Delaware Guernsey Breeders' Association held in Harmony Grange Hall near Milltown on March 7, following Dr. Creedon's retirement after thirty-two years of service with the Bureau of Animal Industry in Delaware. A resolution of thanks for Dr. Creedon's "great influence in the initiation and carrying out of programs aimed at the eradication of disease and the maintenance of herd health in Delaware" was presented.

Dr. Creedon, who is now 68, graduated from New York State Veterinary College in 1907. After practicing in New York City for a few years, he accepted an appointment with the Bureau and was first assigned to foot-and-mouth disease control. He was transferred to Delaware in 1920, where he has been engaged in tuberculosis and brucellosis eradication and other disease control work.

s/E. F. WALLER, *Resident Secretary.*

District of Columbia

District Association.—The second quarterly meeting of the District of Columbia Veterinary Medical Association was held March 10 at the Army Medical Graduate School, with President E. Barnwell Smith presiding.

Dr. S. F. Scheidy, veterinary medical director of Sharp & Dohme, Inc., spoke on "Fundamentals of Antibiotic Therapy."

At the business session, Dr. W. T. S. Thorp was elected delegate to the AVMA House of Representatives, and Dr. E. R. Goode, Jr., was elected alternate.

s/WILLIAM C. PATTERSON, JR., *Secretary.*

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Colonel Hartman Promoted to Rank of Brigadier General.—Colonel Jacob L. Hartman, who was appointed chief of the Veterinary Corps of the Army Medical Service to succeed Brig. Gen. James A. McCallam, was promoted to the rank of brigadier general on March 5, 1953, in the office of the Army Surgeon General in an impressive ceremony before a large group of military and civilian personnel. The AVMA was represented by Brig. Gen. James A. McCallam, retired.

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Death of Mrs. Fladness.—Mrs. Marion B. Fladness, wife of Dr. S. O. Fladness, assistant chief of the Bureau of Animal Industry, U. S. Department of Agriculture, died March 18, 1953, after a long illness. Mrs. Fladness was active in the League of Women Voters and the Red Cross. Besides her husband, she is survived by two sisters and three brothers.

Florida

Personal.—Dr. E. F. Thomas (GA '26) has moved from Jacksonville to Sarasota, where he is building a hospital and will conduct a mixed practice.

Georgia

South Georgia Association.—On Jan. 25, 1953, the South Georgia Veterinary Medical Association met in Albany. The program consisted of a large animal panel composed of **Drs. H. G. Young,** Thomasville, chairman; **John Salter,** Dawson; and **J. R. Clanton,** Thomasville; and a small animal panel consisting of the following participants: **Drs. W. D. Martin,** Albany, chairman; **E. A. Davis,** Columbus; **C. C. Rife,** Atlanta; and **C. C. Sapp,** Albany. The discussions were interesting and profitable. Both panels invited audience comments and participation. Following adjournment, the members and their wives enjoyed a fine smorgasbord dinner.

s/MAX B. ATWOOD, *Secretary.*

Illinois

Dr. John B. Jaffray Honored.—Veterinarians and their wives in the Chicago area joined recently in honoring Dr. John B. Jaffray, well-known small animal practitioner of Chicago, on

the occasion of the fiftieth anniversary of his graduation from Chicago Veterinary College. A dinner, attended by some 50 friends and guests, was tendered Dr. and Mrs. Jaffray at the Svithiod Club in Chicago on the evening of March 27, 1953. Dr. Jaffray and his brother, Dr. David, now retired, conducted one of the largest practices in Chicago for many years, going back to the time when horses comprised the major portion of veterinary work in cities. Fitting tributes were paid to Dr. Jaffray for his outstanding record as a veterinarian by representatives of veterinary medical associations and veterinary publications.

Indiana

Michiana Association.—Forty-eight members and wives of the Michiana Veterinary Medical Association met in the Hotel LaSalle, South Bend, on March 12, 1953.

Dr. W. A. Aitken, editor-in-chief of AVMA publications, gave an enlightening "behind-the-door" sketch of the publications of the AVMA.

He also demonstrated the use of a simple "embryotomy tube" during a discussion of obstetrical problems.

The meeting was brought to a close with a question and answer period among the members.

s/BRUCE HOSTRAWSER, *Secretary.*

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Tenth District Association.—On February 19, the Tenth District (Ind.) Veterinary Medical Association, Inc., met in the Hartley Hills Country Club near Hagerstown. **Mr. Gene Stonecipher,** service manager of the Perfect Circle Corp., showed a motion picture of the speedway race held in Indianapolis; and **Col. Daniel I. Glossbrenner** related some of the experiences he had in England, France, Holland, and Denmark in 1952, when he studied swine production, marketing, and nutrition in these countries.

s/J. L. KIXMILLER, *Resident Secretary.*

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Wabash Valley Association.—The Wabash Valley Veterinary Medical Association met in the Francis Hotel, Kokomo, on Feb. 18, 1953, to hear **Dr. C. P. Brose** of the state veterinary department, discuss coöperation between the practitioner and the state and BAI veterinarians in the control of vesicular exanthema, tuberculosis, and brucellosis.

s/J. L. KIXMILLER, *Resident Secretary.*

Iowa

Dr. Cole Retires.—Dr. C. G. Cole (ISC '06) who has spent most of his active professional years in charge of hog cholera control research has retired. Dr. Cole was in charge of hog cholera antiserum and virus production at Iowa State College when commercial laboratories were in their infancy and when state laboratories were charged with such production.

Later, he worked with Drs. W. B. Niles and C. N. McBryde in the famous Hog Cholera Research Station near Ames, where the serum was first produced.

He was in charge of that laboratory for many years and has been succeeded by Dr. J. P. Torrey (MSC '31). Dr. Cole is writing a history of the research work done by the U. S. Bureau of Animal Industry on hog cholera.

Kansas

Central District Association.—On March 1, the Central Kansas District Veterinary Medical Association met in the Warren Hotel, McPherson. **Dr. L. D. Jernigan,** Council Grove, district trustee, presided over the meeting. **Dr. M. A. Schooley,** director of veterinary research, Armour Laboratories, discussed adrenomone, with illustrations.

An afternoon snow and sleet storm held the attendance down, so that only 40 were present to enjoy the meeting and the smorgasbord which preceded it.

Mr. Ernest Boley of Wichita was reappointed secretary-treasurer of the Association.

The next meeting of this Association will be a family picnic at Yentrouc Lake on July 5.

s/K. M. CURTS, *Resident Secretary.*

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Sedgwick County Association.—The Sedgwick County (Kansas) Veterinary Medical Association met at Stockyards Hotel in Wichita on Jan. 22, 1953, with **Dr. John E. Fieser,** Clearwater, presiding.

The association passed a resolution to the effect: "That advertising in the yellow section of the telephone directory should be limited to name, address, and whether large or small animal practitioner. All listings to be in small type."

Dr. John Harris, state veterinarian, Topeka, discussed tuberculosis, with a brief review of the work done in Kansas and suggestions on various phases of tuberculin testing. A question and answer period followed.

s/K. M. CURTS, *Resident Secretary.*

Massachusetts

State Association.—The regular monthly meeting of the Massachusetts Veterinary Medical Association was held February 25 at the Hotel Beaconsfield. **Dr. Peter C. Kennedy,** New York State Veterinary College, Ithaca, presented an illustrated talk on "The Practitioner Conducts an Autopsy." **Dr. Gerry B. Schnelle,** chief of staff, Angell Memorial Animal Hospital, Boston, was guest speaker at the March 25 meeting. He discussed "A Consideration of Failures in Distemper Immunization."

The officers of the Association for 1953 are: Drs. E. J. Welch, New Bedford, president;

R. H. Bruce, Dedham, first vice-president; Charles M. de Varennes, Quincy, second vice-president; and C. Lawrence Blakely, Needham, secretary-treasurer.

s/C. LAWRENCE BLAKELY, *Secretary.*

Michigan

Southeastern Association.—On March 12, the Southeastern Michigan Veterinary Medical Association met at the Herman Kiefer Hospital in Detroit. The program consisted of a series of brief papers presented by members on various subjects. Some of these speakers were: **Drs. H. E. Burdick, L. Schrieber, W. Fuller, C. A. Moore, H. M. Owen,** and **S. Kelly,** all of Detroit.

s/S. KELLY, *Secretary.*

Minnesota

State Society.—At the fifty-sixth annual meeting of the Minnesota State Veterinary Medical Society, Jan. 26-28, 1953, the following officers were elected: Drs. E. G. Hughes, Sleepy Eye, president; D. H. Spangler, Atwater, president-elect; H. C. H. Kernkamp, St. Paul, first vice-president; L. H. Pint, Austin, second vice-president; and B. S. Pomeroy, St. Paul, secretary-treasurer. The board of trustees is composed of Drs. E. H. Hughes; D. H. Spangler; L. T. Christensen, Hancock; D. E. Trump, Owatonna; R. J. Tobola, Jackson; and B. S. Pomeroy, St. Paul.

During the fifty-six annual meeting of the Minnesota V.M.S. in January, the following men were elected to life membership (left to right)—Dr. E. W. Berg, E. T. Phelps, W. F. Flanary, and W. L. Boyd.

The following men were elected to life membership in the Association at this meeting: Drs. E. W. Berg, E. T. Phelps, W. F. Flanary, and W. L. Boyd.

s/HENRY J. GRIFFITHS, *Resident Secretary.*

Missouri

State Association.—The sixty-third annual convention of the Missouri Veterinary Medical Association was held Feb. 23-24, 1953, at the Hotel Jefferson in St. Louis.

During the large animal section, the following speakers presented papers: **Drs. R. L. Marsh,** Princeton, Ill.; **W. R. Sheets,** Farmington; **A. G. Madden, Jr.,** Maderia, Ohio; **J. E. Weinman,** University of Missouri, Columbia; **W. G. Raudabaugh,** Piper City, Ill.; **J. D. Ray,** White Hall, Ill.; **E. A. Woelffer,** Oconomowoc, Wis.; **Paul Jungerman,** Aurora; **Dean A. H. Groth,** University of Missouri; **A. H. Quin,** Kansas City.

The following participants presented the small animal section: **Drs. C. E. Hofmann,** Tulsa, Okla.; **Wm. G. Magrane,** Mishawaka, Ind.; **Jacques Jenny,** University of Pennsylvania; and **M. L. Morris,** Topeka, Kan.

Other program speakers were **Drs. G. L. Dunlap,** president-elect of the Missouri Association; and **W. L. Boyd,** St. Paul, Minn., president of the AVMA.

The following officers will serve the Association during 1953: Drs. Glen Dunlap, Kansas City, president; O. E. Ellis, Paris, president-elect; W. R. Sheets, Farmington, first vice-president; T. M. Eagle, Parkville, second vice-president; C. E. Watson, Lexington, third vice-president; and Paul L. Spencer, Jefferson City, secretary-treasurer.

s/A. H. GROTH, *Resident Secretary.*

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Kansas City Association.—At the March 17 meeting of the Kansas City Veterinary Medical Association, **Dr. G. K. L. Underbjerg,** Kansas State College, discussed nutritional deficiencies of large and small animals.

s/J. C. DAVIS, *Secretary.*

Montana

New Artificial Insemination Law.—A new artificial insemination law, effective Jan. 1, 1954, in Montana provides for the regulation of the artificial insemination of animals and poultry by the Livestock Sanitary Board; the licensing of inseminators; the examination of all candidates; the keeping of records; and specifies the sires which can be used. These sires must be free from brucellosis, vibriosis, trichomoniasis, dourine, posthitis, pullorum disease, and other transmissible infectious diseases, as well as hereditary malformations and other undesirable characteristics.

New Brunswick

New Brunswick Association.—At the annual business meeting of the New Brunswick Veterinary Association held in Moncton on Feb. 21, 1953, the following officers were elected: Drs. R. J. McClenaghan, Moncton, president; D. B. Butterwick, Fredericton, vice-president; W. A. Roach, Fredericton, secretary-treasurer; J. W. Sinclair, Moncton, F. M. Wheatley,

Fredericton, F. McLeod, St. John, and J. F. Frank, Sackville, councillors.

The highlight of the evening was a banquet presided over by the retiring secretary-treasurer, Dr. D. G. Moore. Several interesting films were shown by Dr. J. T. Akins, director, Provincial Veterinary Services.

s/J. F. FRANK, *Resident Secretary.*

New York

New York City Association.—The regular meeting of the Veterinary Medical Association of New York City, Inc., was held at the New York Academy of Sciences on March 4, 1953. **Dr. Ellis P. Leonard,** professor and head, Department of Therapeutics and Small Animal Diseases, and director, Small Animal Clinic, New York State Veterinary College, Ithaca, presented a paper on "Lung Ventilation During Chest Surgery" illustrated by colored motion pictures.

s/C. R. SCHROEDER, *Secretary.*

Oklahoma

Research Conference on Anaplasmosis.—The second national Conference on Anaplasmosis in Cattle was held in Stillwater, Okla., on Feb. 18-19, 1953. The meeting was sponsored jointly by the Bureau of Animal Industry and the experiment stations. Dr. Louis Hawkins, associate director, Oklahoma Experiment Station, who is administrative advisor, served as the host and general program chairman. There were representatives from the Agricultural Research Administration, U. S. Bureau of Animal Industry, Washington, D. C., and Auburn, Ala., and the following states: Oregon, California, Colorado, Texas, Oklahoma, Kansas, Nebraska, Minnesota, Missouri, Louisiana, Illinois, Michigan, North Carolina, and Maryland.

The first day of the conference was spent at Stillwater and most of the second day was spent visiting the Oklahoma A. & M. research facilities at Pawhuska. The group were guests of the Osage County Cattlemen's Association at noon February 19 in Pawhuska.

Those asked to serve on the technical committee for the ensuing year are: Drs. John Christensen, University of California, School of Veterinary Medicine, chairman; William Mohler, Bureau of Animal Industry, Washington, D. C., vice-chairman; and W. T. Oglesby, Department of Veterinary Science, Louisiana State University, secretary.

s/W. T. OGLESBY, *Secretary.*

Orgeon

State Association.—The Oregon State Veterinary Medical Association held its annual winter meeting in Portland on Jan. 30-31, 1953. The following speakers presented papers on the scientific program: **Drs. Richard Ott,** Washington State College, Pullman; **R. C. Schock,** Lederle Laboratories; **K. J. Peterson,** Salem; and **J. O. Schnautz,** Oregon State College, Corvallis.

The Associattion has drawn up and is now backing in the state legislature some important revisions of the veterinary practice act.

s/EDWARD L. HOLDEN, *Resident Secretary.*

Pennsylvania

Dr. Witte Appointed to Health Department.—Dr. Ernest J. Witte has been appointed by Dr. Russell E. Teague, secretary of health of the Commonwealth of Pennsylvania, to the staff of the Health Department as a public health veterinarian. Dr. Teague plans to establish a division of veterinary public health soon.

Dr. Witte is a graduate of the School of Veterinary Medicine of the University of Pennsylvania (1942) and received his Master of Public Health degree from the Columbia University School of Public Health in 1946. He was most recently connected with the veterinary section of the U. S. Public Health Service, Communicable Disease Center, Atlanta, Ga.

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Bucks-Montgomery Association.—The Bucks-Montgomery Veterinary Medical Association met at Doylestown on March 11. **Dr. Walter LaGrange,** School of Veterinary Medicine, University of Pennsylvania, discussed leptospirosis.

s/VINCENT W. RUTH, *Secretary.*

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Keystone Association.—**Dr. E. A. Woelffer** of Oconomowoc, Wis., discussed cattle diseases at the March 25 meeting of the Keystone Veterinary Medical Association which was held at the School of Veterinary Medicine, University of Pennsylvania.

s/R. D. HOFFMAN, *Resident Secretary.*

Puerto Rico

Personal.—In February, Dr. and Mrs. Otto Stader and their daughter from Ardmore, Pa., visited Puerto Rico and met with local veterinarians and their families. Dr. F. Menendez Guillot, a former classmate of Dr. Stader's, took them over the Island and showed them places of interest and beauty. Our distinguished visitors praised the good sanitation, progress, and hospitality of Puerto Rico.

s/O. A. LOPEZ-PACHECO, *Resident Secretary.*
F. MENENDEZ GUILLOT.

Vermont

Dr. Dumas Featured in Magazine Article.—Dr. Ray Dumas (MSC '49), Waterbury, was featured in an article, "Country Vet," in the winter 1952-53 issue of *Vermont Life.* The author, who accompanied Dr. Dumas on various calls during a "typical" day, tells in his well-illustrated article the inspiring story of the busy life of a young veterinarian and his wife es-

tablishing a practice in the back hills and valleys "where it will do the most good."

Washington

Conference for Veterinarians.—The fifth annual conference for veterinarians, sponsored by the State College of Washington, was held in Pullman on April 9-11, 1953.

The following guest speakers addressed the conference: **Drs. P. M. Hinze,** president, Washington State Veterinary Medical Association; **J. W. Stafford,** Montana Experiment Station, Bozeman; **G. P. Talbot,** Kelowna, B. C.; **R. D. Turk,** Texas A. & M. College, College Station; and **W. A. Young,** western regional director, American Humane Association.

Members of the college staff who participated in the program were **Drs. C. M. Bemis, M. E. Ensminger, D. M. Fluharty, G. H. Keown, J. C. Knott, S. G. Kenzy, T. Moll, R. L. Ott, G. R. Spencer,** and **E. C. Stone,** dean.

s/R. E. WATTS.

West Virginia

State Association.—The annual meeting of the West Virginia State Veterinary Medical Association was held in the Greenbrier Hotel, White Sulphur Springs, on March 1-2, 1953. The first day was devoted to a business meeting, with a banquet in the evening. The following speakers comprised the scientific program: **Drs. A. H. Craige, Jr.,** Pitman-Moore Co., Indianapolis, Ind.; **Jack Knappenberger,** Norden Laboratories, Columbus, Ohio; **Harry Fallon,** Huntington, W. Va.; and **H. P. Buckley,** Lewisburg.

The films, "Gastric Fistula Technique" and "Anthrax in Ohio" were shown.

s/ELVIN R. COON, *Secretary.*

Wisconsin

Miss Goldsby Joins Staff of Scientific Laboratories.—Alice I. Goldsby has joined the staff of American Scientific Laboratories at Madison as research parasitologist. Except for one year to complete her work for the M.S. degree at Utah State College, Miss Goldsby has been engaged in veterinary research at the North Dakota Agricultural Experiment Station since 1944, after a year of similar work at the Virginia Polytechnic Institute. She is author or co-author of more than forty publications in her field.

FOREIGN NEWS

England

Psitticosis in Ducks.—Psitticosis was reported Jan. 16, 1953, to have been discovered in ducklings at Norfolk and Surrey, England. The Ministry of Agriculture and Fisheries immediately imposed restrictions, with slaughter of the affected and contact birds and the disinfection of premises. It is reported to be the first recovery of the virus from domestic poultry in England.—*Circulaire, Off. Internat. des Epizoöt., Jan., 1953.*

India

Pleuropneumonia in Assam.—A nine-year study of bovine contagious pleuropneumonia in Assam, India, ending in January, 1949, revealed that 43 outbreaks involving over 1,900 animals had occurred with an average mortality of 86 per cent. Common grazing ground and unrestricted cattle movement contributed to the spread of infection. The disease occurred in every month of the year.—*Indian J. Vet. Sci. and Anim. Husb., Dec., 1951.*

Turkey

Dr. Kieldsen to Help Establish Meat Inspection System.—Dr. R. F. Kieldsen (MSC '40), formerly of Chicago, Ill., has been employed by the Turkish government to assist in the establishment of a meat inspection system in Turkey. This will entail training of a Turkish veterinary force in the techniques and procedures of meat inspection and the promulgation of regulations; the establishment of a system of live and dressed grading for their government; and conferences with government officials relative to disease control problems.

Dr. Kieldsen was employed by the U. S. Bureau of Animal Industry from 1940 until

Dr. Robert F. Kieldsen

1947, when he became northwest representative for the American Meat Institute. He was promoted to the meat education program and served as technical adviser in several states until 1948 when he was assigned to the Chicago

office where he was director, Department of Membership Service; director, sausage and casings Division; and served as chairman of the A.M.I. weekly staff meetings for two years. He had also represented the A.M.I. as alternate member on the National Brucellosis Committee. Prior to his appointment, he served as veterinary circuit supervisor at the Chicago Station and was instructor in sausage and ready to serve meats at the Institute of Meat Packing, University of Chicago.

STATE BOARD EXAMINATIONS

Iowa—The Iowa Veterinary Medical Examining Board will hold examinations for the licensing of veterinarians on Monday and Tuesday, June 15-16, 1953. Applicants are asked to be in the office of the Division of Animal Industry, State House, Des Moines, Iowa, not later than 8:00 a.m. on the morning of June 15. For further information write to Dr. H. U. Garrett, Chief, Division of Animal Industry, State House, Des Moines 19, Iowa.

Florida—The Florida State Board of Veterinary Examiners will hold an examination on June 15-17, 1953, at the Everglades Hotel, Miami, Fla. Address inquiries to Dr. E. L. Matthews, Box 141, Palatka, Fla.

Ohio—The Ohio Board of Veterinary Examiners will conduct an examination on June 9-10, 1953, in the Clinic Building, College of Veterinary Medicine, Ohio State University, Columbus, Ohio. Applicants desirous of taking the examination should be present at 8:00 a.m. on the first day. Applicants who are not graduates of Ohio State University should supply the Division with a photograph showing the head and shoulders (2 in. by 3 in.) and photostatic copy of their certificate of graduation. These are to be in the hands of the secretary, *ex officio*, Division of Animal Industry, Room 709 State Office Building, Columbus 15, Ohio, not later than May 31, 1953. Address inquiries to Dr. James R. Hay, Division of Animal Industry, Department of Agriculture, Columbus 15, Ohio.

Oklahoma—The Oklahoma Board of Veterinary Medical Examiners will hold examinations for license to practice veterinary medicine in Oklahoma on May 26-27, 1953, in the Clinic Building, School of Veterinary Medicine, Oklahoma A. & M. College, Stillwater, Okla. Applications should be mailed before these dates to Dr. J. B. Corcoran, 127 N.W. 23rd Street, Oklahoma City, Okla.

BIRTHS

Dr. (TEX '50) and Mrs. Erwin Lloyd Soyars, London, England, and San Antonio, Texas, announce the birth of a daughter, Lorraine Gayle McKay, on Nov. 7, 1952.

Dr. (ISC '43) and Mrs. R. C. Brager, Hammond, Ind., announce the birth of Betsy Louise on Jan. 22, 1953. She joins John who is 5 years old and Jeffrey, 4.

Dr. (OVC '52) and Mrs. Roy W. Spracklin, Hannon, Ont., announce the birth of a son, Robert Paul, on Feb. 17, 1953.

Dr. (MSC '51) and Mrs. William F. Walquist, Roseville, Mich., announce the birth of a son, Paul M., on Feb. 18, 1953.

Dr. (ISC '43) and Mrs. Harlan M. Stanton, Park Forest, Ill., announce the birth of a son, Paul James, on March 14, 1953.

Dr. (ONT '38) and Mrs. Leonard Tovell, Chicago, Ill., announce the birth of a daughter, Patricia, on March 17, 1953.

Dr. (KSC '52) and Mrs. H. C. Schoonover, Caldwell, Kan., announce the birth of a daughter, Bonnie Sue, on March 21, 1953.

DEATHS

Harry E. Barker (COR '13), Clifton Springs, N. Y., died recently. Dr. Barker was a general practitioner.

Edgar S. Brown (ONT '23), New Dundee, Ont., died recently. Dr. Brown was a general practitioner.

Alexander Burr (HAV '89), 85, Boston, Mass., died March 16, 1953. Dr. Burr was veterinarian for the City of Boston from 1889 to 1937 when he retired.

★**George A. Clark** (CVC '16), 65, Toronto, Ont., died Jan. 25, 1953. Dr. Clark was a member of the Ontario Veterinary Association and was admitted to the AVMA in 1922. He is survived by his widow.

★**Ralph H. Crowell** (KCV '13), 65, Anna, Ill., died March 2, 1953. Dr. Crowell was a government meat inspector in Chicago for twenty-five years. He retired and moved to Anna in August, 1952. He is survived by his widow and two sisters. Dr. Crowell was admitted to the AVMA in 1944.

Thomas A. Donald (KCV '92), Lincoln, Ill., died Oct. 28, 1952. Dr. Donald had specialized in equine practice. He is survived by his widow.

Carl W. Dwyer (MSC '21), 58, Enosburg Falls, Vt., died Dec. 16, 1952, following a long illness. Dr. Dwyer had practiced in the Enosburg Falls area for many years.

John Van Enenaam (MCK '11), Houston, Texas, died Jan. 13, 1953. Dr. Enenaam was employed by the U. S. Bureau of Animal Industry.

★**Eugene Ferron** (UP '14), 59, Sewickley, Pa., died Feb. 18, 1953. Dr. Ferron was a general practitioner. He was a member of the

Pennsylvania Veterinary Medical Association and of the AVMA.

John F. Fisher (ONT '86), 90, Brandon, Man., died Feb. 26, 1953. Dr. Fisher had practiced for more than sixty years in Brandon. He had retired recently.

Joseph M. Greiner (IND '00), 72, Indianapolis, Ind., died Dec. 7, 1952. Dr. Greiner had retired from general practice several years ago.

Charles L. Haas (OVC '96), 81, Bristol, Ind., died Dec. 21, 1952. Dr. Haas, once veterinarian with a large circus, had retired several years ago.

Joseph K. Hogan (KCV '14), 65, Corning, Iowa, died Jan. 8, 1953. Dr. Hogan had retired from practice.

Grant S. Hopkins (NYA '00), 87, Ithaca, N. Y., died Dec. 21, 1952. Dr. Hopkins was professor emeritus of veterinary anatomy at New York State Veterinary College, Ithaca. He had taught at the College since 1890 and had been head of the Department of Veterinary Anatomy from 1903 until his retirement in 1934.

Murray V. C. Howes (COR '10), 65, Portland, Ore., died Nov. 27, 1952. Dr. Howes, one-time veterinarian for the Portland City Zoo, had conducted a small animal practice for several years.

Waldo H. Johnson (COL '13), Kingman, Kan., died Jan. 20, 1953. Dr. Johnson was a general practitioner. He was a member of the Kansas State Veterinary Medical Association.

Thomas B. Jones (KCV '07), 68, Escondido, Calif., died Dec. 13, 1952. Dr. Jones was employed by the U. S. Bureau of Animal Industry. He had been a member of the AVMA.

B. F. Kennelly (CVC '17), Woodstock, Ill., died recently. Dr. Kennelly was county veterinarian for McHenry County.

Claude W. King (OSU '22), Trenton, Ohio, died in July, 1950. Dr. King was a general practitioner. He is survived by his widow.

Frederick F. Koenig (COR '09), 69, Jamestown, N. Y., died Dec. 30, 1952. Dr. Koenig was a general practitioner. He was a member of the New York State and Western New York Veterinary Medical Associations and had been a member of the AVMA.

J. Karl Leaverton (WSC '29), Portland, Ore., died Sept. 28, 1952. Dr. Leaverton was a small animal practitioner.

★**George D. McIntyre** (ONT '11), 70, North Branch, Mich., died Jan. 27, 1953. Dr. McIntyre was a general practitioner. He was admitted to the AVMA in 1919.

E. J. MacLachlan (ONT '17), Jackson, Mich., died March 22, 1951. Dr. MacLachlan was director of the Department of Health in Jackson. He is survived by his widow.

George L. McQueen (WSC '38), Warren, Ore., died Jan. 15, 1953. Dr. McQueen was employed by the U. S. Bureau of Animal Industry.

Lee W. Marner (MCK '18), 58, Omaha, Neb., died Jan. 15, 1953. Dr. Marner was employed by the U. S. Bureau of Animal Industry.

Frank E. Maxwell (ONT '16), Barrie, Ont., died recently. Dr. Maxwell was a general practitioner.

Alvah E. Metzger (CVC '93), 85, Clyde, Ohio, died Jan. 4, 1953. In addition to his veterinary practice, Dr. Metzger was also president of the Clyde Savings Bank.

H. H. Newcomb (MCG '97), 80, Ivoryton, Conn., died Sept. 18, 1952. Dr. Newcomb had been consultant for Ciba Pharmaceutical Co.

★**Howard L. Ormiston** (ISC '46), 29, Indianola, Iowa, died Jan. 7, 1953. Dr. Ormiston was a general practitioner. He was admitted to the AVMA in 1946.

William E. Patterson (KCV '09), 80, Prairie Village, Kan., died Feb. 6, 1953, after an illness of several months. Dr. Patterson was employed by the U. S. Bureau of Animal Industry until his retirement in 1946. In 1947, he accepted appointment as meat inspector for Kansas City, Mo. He retired in July, 1952, because of poor health. Dr. Patterson is survived by one daughter.

★**John O. F. Price** (ONT '91), 85, Algona, Iowa, died Feb. 17, 1953. Dr. Price, who had been employed by the U. S. Bureau of Animal Industry, had retired recently. He is survived by his widow. Dr. Price was admitted to the AVMA in 1904.

A. B. Sexmith (ONT '04), Charlotte, Mich., died Aug. 11, 1952. Dr. Sexmith was a general practitioner.

★**Leroy R. Stauffer** (OSU '25), 60, Detroit, Mich., died early in 1953. Dr. Stauffer was a member of the Michigan Veterinary Medical Association. He was admitted to the AVMA in 1926.

★**William B. Switzer** (OVC '93), Oswego, N. Y., died in February, 1953. Dr. Switzer, a general practitioner, was admitted to the AVMA in 1913.

★**Fred J. Tacke** (OSU '39), 36, Evanston, Ill., died March 14, 1953. Dr. Tacke was a member of the Chicago and Illinois Veterinary Medical Associations. He was admitted to the AVMA in 1939.

John Thomas (AVC '97), 79, Wells River, Vt., died Oct. 16, 1952. During the fifty years he was in practice in Wells River, Dr. Thomas was a great inspiration to veterinarians in Vermont. He had been a member of the AVMA.

William A. Walker (KCV '14), 61, Golconda, Ill., died Jan. 21, 1953. Dr. Walker had just been appointed as veterinarian of the Illinois Department of Agriculture, Division of Livestock Industry. He is survived by his widow.

★Indicates members of the AVMA.

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COMING MEETINGS

Notices of Coming Meetings must be received by 4th of month preceding date of issue

International Fertility Association. World conference. Henry Hudson Hotel, New York City, May 25-31, 1953. Abner I. Weisman, M.D., 1160 Fifth Ave., New York 29, N.Y., Chairman, Committee on Arrangements.

Texas A. & M. College. Annual conference for veterinarians. School of Veterinary Medicine, Texas A. & M. College, College Station, Texas, June 4-5, 1953. R. D. Turk, chairman.

Kansas State College. Annual conference for veterinarians. School of Veterinary Medicine, Kansas State College, Manhattan, Kan., June 5-6, 1953. E. E. Leasure, dean.

Wisconsin, University of. Postgraduate conference for veterinarians. Department of Veterinary Science, University of Wisconsin, Madison, Wis., June 8-10, 1953. C. A. Brandly, chairman.

Montana Veterinary Medical Association. Annual meeting. Bozeman, Mont., June 11-13, 1953. E. A. Tunnicliff, Bozeman, Mont., secretary.

North Dakota State Veterinary Medical Association. Annual meeting. Minot, N. Dak., June 14-16, 1953. D. F. Eveleth, Department of Veterinary Science, State College Station, Fargo, N. Dak., secretary.

Georgia Veterinary Medical Association. Annual meeting. Atlanta Biltmore Hotel, Atlanta, Ga., June 21-23, 1953. Chas. C. Rife, 420 Edgewood Ave., N. E., Atlanta, Ga., secretary.

North Carolina State Veterinary Medical Association and South Carolina State Veterinary Medical Association. Joint meeting. Mayview Manor, Blowing Rock, N. Car., June 29-30, 1953. C. W. Young, Mocksville, N. Car., secretary, North Carolina Association.

South Carolina State Veterinary Medical Association and North Carolina State Veterinary Medical Association. Joint meeting. Mayview Manor, Blowing Rock, N. Car., June 29-30, 1953. R. A. Mays, P. O. Box 1147, Columbia 1, S. Car., secretary, South Carolina Association.

California State Veterinary Medical Association. Annual June meeting. Lafayette Hotel, Long Beach, Calif., June 22-24, 1953. Charles S. Travers, 3004 16th St., Room 208, San Francisco 3, Calif., executive secretary.

Maritime Veterinary Associations. Joint conference. Mount Allison University, Sackville, N. B., June 23-25, 1953. J. F. Frank, Sackville, N. B., secretary, joint committee.

Maryland State Veterinary Medical Association. Annual summer meeting. George Washington Hotel, Ocean City, Md., June 25-26, 1953. John D. Gadd, Cockeysville, Md., secretary.

Missouri, University of. Annual short course for graduate veterinarians. School of Veterinary Medicine, University of Missouri, Columbia, Mo., June 29-30, 1953. Cecil Elder, chairman.

Kentucky Veterinary Medical Association. Annual summer meeting. Seelbach Hotel, Louisville, Ky., July 8-9, 1953. T. J. Stearns, Room 216, Live Stock Exchange Bldg., Louisville, Ky., secretary.

American Veterinary Medical Association. Annual meeting. Royal York Hotel, Toronto, Ont., July 20-23, 1953. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., executive secretary.

New York State Veterinary Medical Society. Annual meeting. Hotel Syracuse, Syracuse, N. Y., Sept. 14-16, 1953. J. S. Halat, 803 Varick St., Utica, N. Y., acting executive secretary.

Alabama Annual Conference for Veterinarians. School of Veterinary Medicine, Alabama Polytechnic Institute, Auburn, Ala., Sept. 17-19, 1953. R. S. Sugg, dean.

Georgia Coastal Plain Experiment Station. Annual short course for veterinarians. Georgia Coastal Plain Experiment Station, Tifton, Ga., Oct. 12-13, 1953. Peter H. Langer, secretary.

Pennsylvania State Veterinary Medical Association. Annual meeting. Hotel William Penn, Pittsburgh, Pa., Oct. 14-16, 1953. R. D. Snyder, Walnut St. and Copley Rd., Upper Darby, Pa., secretary.

Eastern Iowa Veterinary Association. Annual Meeting. Hotel Montrose, Cedar Rapids, Iowa, Oct. 15-16, 1953. Wayne W. Thompson, Earlville, Iowa, secretary.

South Dakota Veterinary Medical Association. Annual meeting. Cataract Hotel, Sioux Falls, S. Dak., Oct. 16-17, 1953. R. M. Scott, 2419 S. Main St., Sioux Falls, S. Dak., secretary.

New England Veterinary Medical Association. Annual meeting. Hotel Viking, Newport, R. I., Oct. 18-20, 1953. James W. Armstrong, 296 Auburn St., Cranston, R. I., president.

New York State Veterinary College. Annual conference for veterinarians. New York State Veterinary College, Cornell University, Ithaca, N. Y., Jan. 6-8, 1954. W. A. Hagan, dean.

Kansas State Veterinary Medical Association. Annual meeting. Broadview Hotel, Wichita, Kan., Jan. 18-20, 1954, K. Maynard Curts, Kansas City, Kan., secretary.

(Continued on p. 32)

Two members of the Gaines Research Kennels staff, shown here, treating a pup in the Examination Room.

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"Spike" is a very important beagle. He may never take Best in Show, but his role in life could very well determine future blue ribbon winners. You see, "Spike" is one of the many dogs at the Gaines Research Kennels who plays an active part in the test feedings and other scientific studies relating to better dog nutrition.

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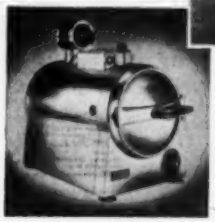

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(COMING MEETINGS—*continued from p. 30*)

Regularly Scheduled Meetings

Bay Counties Veterinary Medical Association, the second Tuesday of each month. David E. Madsen, 44 South 4th St., San Jose, Calif., secretary.

Cedar Valley Veterinary Association, the second Monday of each month (except July and August) at Black's Tea Room, Waterloo. F. E. Brutsman, Traer, Iowa, secretary.

Central California Veterinary Medical Association, the fourth Tuesday of each month. W. E. Smith, 516 Oatman, Sanger, Calif., secretary.

Central Carolina Veterinary Medical Association, the second Wednesday of each month at 7:00 p.m. in the O'Henry Hotel in Greensboro. Mr. Earl D. Adams, Greensboro, N. Car., secretary.

Chicago Veterinary Medical Association, the second Tuesday of each month. Robert C. Glover, 1021 Davis St., Evanston, Ill., secretary.

Coastal Bend Veterinary Association (Texas), the second Wednesday of each month. J. E. Hoban, 4301 S. Port Ave., Corpus Christi, Texas, secretary.

Coon Valley Veterinary Association, the second Wednesday of each month, September through May, at the Bradford Hotel, Storm Lake, Iowa. J. R. Rosdail, Pomeroy, Iowa, secretary.

Cuyahoga County (Cleveland, Ohio) Veterinary Medical Association, the first Wednesday of each month—September through May (except January)—at 9:00 p.m. at the Carter Hotel, Cleveland, Ohio. Roger W. Grundish, 4217 Mayfield Road, South Euclid 21, Ohio, secretary.

East Bay Veterinary Medical Association, bimonthly, the fourth Wednesday. Robert Clemens, 23352 Orchard, Hayward, Calif., secretary.

Fayette County Veterinary Association, Iowa, the third Tuesday of each month, except in July and August, at Pa and Ma's Restaurant, West Union, Iowa. Donald E. Moore, Box 178, Decorah, Iowa, secretary.

Florida, North-East Florida Veterinary Medical Association, the second Thursday of each month, time and place specified monthly. J. O. Whiddon, 829 San Marco Blvd., Jacksonville, Fla.

Greater St. Louis Veterinary Medical Association. Ralston-Purina Research Building, St. Louis, Mo., the first Friday in February, April, June, and November. George A. Franz, 3667a Marceline Terrace, St. Louis, Mo., secretary.

Houston Veterinary Medical Association, Houston, Texas, the first Thursday of each month.

(*Continued on p. 36*)

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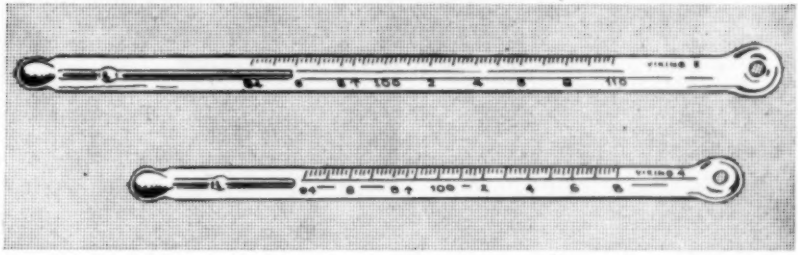

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(COMING MEETINGS—*continued from p. 32*)

Edward Lepon, Houston, Texas, secretary-treasurer.

Illinois Valley Veterinary Medical Association, the second Sunday evening of even-numbered months at the Jefferson Hotel, Peoria, Ill. S. M. McCully, Lacon, Ill., secretary.

Indiana Tenth District Veterinary Medical Association, third Thursday of each month. L. A. Snider, New Palestine, Ind., secretary.

Jefferson County Veterinary Society of Kentucky, Inc., the first Wednesday evening of each month, in Louisville or within a radius of 50 miles. E. M. Lang, 716 E. Broadway, Louisville, Ky., secretary.

Kansas City Small Animal Hospital Association, the first Monday of each month, at the Hotel Continental. T. M. Eagle, Parkville, Route 2, Mo., secretary.

Kansas City Veterinary Medical Association, the third Tuesday of each month, in the Hotel Continental, 11th and Baltimore, Kansas City, Mo. K. M. Curts, 70 Central Ave., Kansas City 18, Kan., secretary.

Kern County Veterinary Medical Association, the first Thursday of each month. Richard A. Stiern, 17 Niles St., Bakersfield, Calif., secretary.

Keystone Veterinary Medical Association, the Philadelphia County Medical Society Building, 301 S. 21st Street, Philadelphia, Pa., on the fourth Wednesday of each month. Raymond C. Snyder, 39th and Woodland Ave., Philadelphia 4, Pa., secretary.

Kyowva Veterinary Medical Association, the second Thursday of each month in the Hotel Prichard, Huntington, W. Va., at 8:30 p.m. Karl Mayer, 1531 Fourth Ave., Huntington, W. Va., secretary.

Maricopa County Veterinary Association, the second Tuesday of each month. Charles J. Prchal, 1722 East Almeria Road, Phoenix, Ariz., secretary.

Metropolitan New Jersey Veterinary Medical Association, the third Wednesday evening of each month from September through May, at the Academy of Medicine of Northern New Jersey, 91 Lincoln Park South, Newark, N. J. Myron S. Arlein, 2172 Millburn Ave., Maplewood, N. J., secretary.

Michiana Veterinary Medical Association, the second Thursday of each month, at Hotel LaSalle, South Bend, Ind. Bruce Hostrawser, 2621 Mishawaka Ave., South Bend, Ind., secretary.

Michigan, Southeastern Veterinary Medical Society. Herman Kiefer Hospital, Detroit, Mich., the second Wednesday of each month from October through May.

(*Continued on p. 38*)

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Peebles' DOG-KIT Milk Formula
HIGH PROTEIN POWDER COMBINED WITH FORTIFIED FAT EMULSION
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Protein (Milk)	29%
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Minerals (Ash)	6%
Vitamin A	20,000 I.U.
Vitamin B_1 (Thiamin)	4.60 mg.
Vitamin B_2 (Riboflavin)	12.00 mg.
Vitamin B_6 (Pyridoxine)	40.00 mg.
Vitamin B_{12}	8.80 U.G.
Vitamin D_3	4,500 I.U.
Vitamin E	50 I.U.
Vitamin K	6.50 mg.
Inositol	600.00 mg.
Niacin	50.00 mg.
Methionine	3.00 gm.
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(COMING MEETINGS—*continued from p. 36*)

Mid-Coast Veterinary Medical Association, the first Thursday of every even month. C. Edward Taylor, 2146 S. Broad St., San Luis Obispo, Calif., secretary.

Milwaukee Veterinary Medical Association. Wisconsin Humane Society, 4150 N. Humbolt Ave., Milwaukee, Wis., the third Tuesday of each month. Kenneth G. Nicholson, 2161 N. Farwell Ave., Milwaukee, Wis., secretary.

Mobile-Baldwin Veterinary Medical Association, the first Tuesday of each month at the Hotel Admiral Simmes, Mobile, Ala. C. Eric Kennedy, Mobile, Ala., secretary.

Monterey Bay Area Veterinary Medical Association, the third Wednesday of each month. C. Edward Taylor, 2146 South Broad St., San Luis Obispo, Calif., secretary.

New Castle County Veterinary Society, the second Wednesday of each month at 9:00 p.m. in the Hotel Rodney, Wilmington, Del. Harold Roberts, Paper Mill Road, Newark R3, Del., secretary.

New York City, Veterinary Medical Association of, the first Wednesday of each month at the New York Academy of Sciences, 2 East 63 St., New York City. C. R. Schroeder, Lederle Laboratories, Inc., Pearl River, N. Y., secretary.

Northern New Jersey Veterinary Association, the fourth Tuesday evening from September through June, at the Casa Mana Restaurant, Cedar Lane, Teaneck, N. J. Robert R. Shomer, 1680 Teaneck Road, N. J., secretary.

Northern San Joaquin Valley Veterinary Medical Association, the fourth Wednesday of each month. Tom Hagan, Gen. Del., Escalon, Calif., secretary.

Oklahoma County Veterinary Medical Association, the second Wednesday of every month except July and August. W. C. Schilb, 4312 N. W. 23rd St., Oklahoma City, Okla., secretary.

Orange Belt Veterinary Medical Association, the second Monday of each month at 7:00 p.m. in the Antlers Hotel, San Bernardino, Calif. R. E. Hoadley, Coachella, Calif., secretary.

Orange County Veterinary Medical Association, bi-monthly. Donald E. Lind, 2643 N. Main, Santa Ana, Calif., secretary.

Peninsula Veterinary Medical Association, the third Monday of each month. P. H. Hand, Box 1035, Millbrae, Calif., secretary.

Piedmont Veterinary Medical Association, the last Friday of each month at 7:00 p.m. in Mull's Motel in Hickory, N. Car. G. V. McCranie, Hickory, N. Car., secretary.

Pima County (Arizona) Veterinary Medical Association, the third Wednesday of each month.

(*Continued on p. 39*)

in Tucson. R. W. Adami, 2103 S. 6th Ave., Tucson, Ariz., resident secretary.

Portland (Oregon) Veterinary Medical Association, the second Tuesday of each month, in the Auditorium of the Upjohn Company. Victor T. Oliver, 9705 S.W. Barbur Blvd., Portland 19, Ore., secretary.

Redwood Empire Veterinary Medical Association, the third Thursday of each month. H. M. Strandberg, 203 D St., Petaluma, Calif., secretary.

Roanoke-Tar (N. Car.) Veterinary Medical Association, the first Friday of each month, time and place specified monthly. C. B. Randall, Kinston, N. Car., secretary.

Sacramento Valley Veterinary Medical Association, the second Wednesday of each month. S. M. Foster, 430 College, Woodland, Calif., secretary.

Saginaw Valley Veterinary Medical Association, the last Wednesday of each month. F. Ferguson, 1702 S. Dort Highway, Flint, Mich., secretary.

San Diego County Veterinary Medical Association, the fourth Tuesday of each month. Warren J. Dedrick, 904 S. Lemon, El Cajon, Calif., secretary.

Santa Barbara-Ventura Counties Veterinary Medical Association, Friday evenings every sixth week. Dee Wodars McDermott, 5879 Hollister, Coleta, Calif., secretary.

Southern California Veterinary Medical Association, the third Wednesday of each month. R. W. Sprowl, 11756 San Vicente Blvd., Los Angeles 49, Calif., secretary.

South Florida Veterinary Society, the third Tuesday of each month, at the Seven Seas Restaurant, Miami, Fla. E. A. Majilton, 1093 N. E. 79th St., Miami, Fla., secretary.

Tulsa Veterinary Medical Association, the third Thursday of each month, in Director's Parlor of the Brookside State Bank, Tulsa, Okla. John Carnes, Muskogee, Okla., secretary.

Foreign Meetings

Fifteenth International Veterinary Congress. Stockholm, Sweden, Aug. 9-15, 1953. Dr. L. de Blieck, Soestdijkseweg 113N., Bilthoven, Netherlands, secretary, Permanent Committee. (U. S. Committee: Dr. W. A. Hagan, N. Y. State Veterinary College, Ithaca, N. Y., chairman; Dr. J. G. Hardenbergh, 600 S. Michigan Ave., Chicago 5, Ill., secretary.)

Sixth International Congress for Microbiology. Città Universitaria, Rome, Italy, Sept. 6-12, 1953. G. Sanarelli, Città Universitaria, Rome, Italy, secretary.

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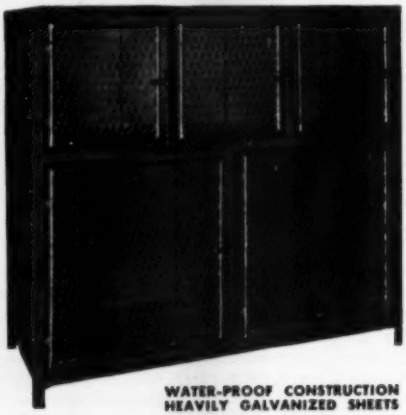

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The Armour Veterinary Laboratories have published a comprehensive dissertation entitled, "The Concept of Ketosis as an Endocrine Disturbance," which is well worth reading. It is rather long and somewhat repetitious but it reviews most of the literature on ketosis in cattle. It also introduces Armour's new therapeutic agent for ketosis, adrenomone, an anterior pituitary preparation containing ACTH. It is especially prepared for, and will be sold only to, veterinarians.

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☐ CASH remittance in full, less 5% for cash, is attached.

☐ C.O.D. 25% deposit, required on all C.O.D. orders, is attached.

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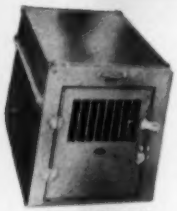
Street Address.....

City.....Zone.....State.....

"The Genuine" THE BEST BUY

The ONLY PLYWOOD CRATES which need no waterproofing and have METAL LINED CORNERS & ALUMINUM TRIM EDGES. The ONLY ALUMINUM CRATED which have NO CAST ALUMINUM DOOR GRILL — THE ONLY CRATES WITH THE ALUMINUM ANGLE TRIM WHICH WILL NOT BEND OR RUST. FREE LETTERING ON ALL CRATES.

IMMEDIATE DELIVERY
100 IN STOCK



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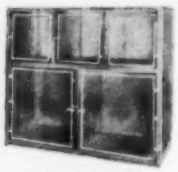


INDOOR KENNEL

5 Compartment Kennels $169.50

Water-proof, sheets heavily galvanized, steel. 1½" angle steel welded frames. Doors—9 ga. 1½" steel mesh with steel tubular frame. Assembled complete. 5' 6" high. 6 ft. long, 6 in. off ground. Painted—175 in stock.

Compare before you buy and you will agree that our kennel is excellently constructed, more costlier materials used, cheaper in price and you actually save from $25.00 to $75.00 for the same kennel constructed elsewhere. Each compartment has drain gutter, no standing water. All floors are flush for easy cleaning. Over 3,000 satisfied customers.

Write For Free 16-Page Catalog.

DEE-CHICAGO MFG. CO

Mfrs. of Dog Crates, Equipt. & Supplies Since 1912
2650 N. Campbell Ave., RE 7-3300, Chicago 29, Ill.

M·A·C

✚ QUICK AND SAFE ✚

in treating Splints, Spavins, Curbs, Sidebones, Inflamed Tendons, Bursal Lameness, Etc.

Single Bottle....$2.00
3 and 1 free.....5.00
6 and 2 free.....9.00
12 and 4 free....17.00
24 and 4 free....28.00

Advantages of using "M. A. C."

Can be applied in a few seconds.
Only one application in 24 hours.
Does not irritate the skin.
More prompt than blisters.
More humane than firing.

Write for Descriptive Price Sheet of Veterinary Dispensing Products.

CARTER-LUFF CHEMICAL CO.
Hudson, N. Y.

CLASSIFIED ADVERTISEMENTS

Twenty-five words or less, $2.50; 8 cents for each additional word. Replies sent in care of the JOURNAL, 25 cents extra.

Remittance must accompany order.

Deadline for want ads 8th of month preceding date of issue.

Names of classified advertisers using key letters can not be supplied. Address your reply to the key letters, c/o JOURNAL of the AVMA, 600 S. Michigan Ave., Chicago 5, Ill., and it will be transmitted to the advertiser.

Wanted—Veterinarians

WANTED—able veterinarian to take full charge of busy small animal hospital, New York State. Owner in service. Opportunity for financial gain. Comfortable apartment included. Address "Box C 8," c/o JOURNAL of the AVMA.

WANTED—veterinarian for permanent position on staff of an excellently equipped hospital serving a busy mixed practice in the Southeast. Give professional qualifications. Will answer all letters and return any photos. Address "Box F 4," c/o JOURNAL of the AVMA.

WANTED VETERINARIAN—for small animal practice in Ohio. Permanent position; a future for partnership. Salary plus commission. Single house residence. Address "Box G 4," c/o JOURNAL of the AVMA.

WANTED—competent, honest graduate to assist with mixed practice near Chicago. References and experience. Permanent; good opportunity. Address "Box G 9," c/o JOURNAL of the AVMA.

WANTED—assistant for mixed country practice, northern Northeast; 80% large animals. Must be graduate of recognized school and willing worker. Address "Box G 10," c/o JOURNAL of the AVMA.

VETERINARIAN WANTED—applications are invited for an annually rotating clinical and research internship. Employment equally divided between research and practice. Laboratory, surgical, x-ray, and library facilities available. Salary $3,000 per annum. Massachusetts license essential. Address Dr. Marcus M. Mason, 20 Harvard St., Worcester, Mass.

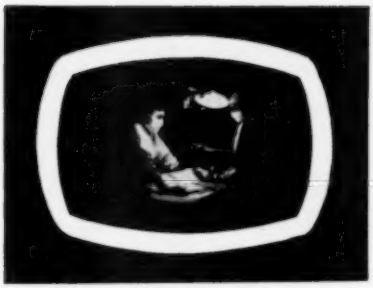
Excellent opportunity with prominent New Jersey ethical pharmaceutical company for veterinarian interested in research staff position. Prefer man

(*Continued on p. 44*)

40 years of service to the veterinary field

GOSHEN LABORATORIES, INC.
GOSHEN, NEW YORK
THE PRACTITIONER'S HOUSE

When you buy, buy from an ethical house



...again
this year

TELEVISED SURGERY

at the A. A. H. A. Meeting in Minneapolis

Once more, "closed circuit" televised surgical and laboratory demonstrations will be an outstanding attraction at the meeting of the American Animal Hospital Association: Radisson Hotel, Minneapolis, May 6-9, 1953.

In cooperation with Radio Corporation of America, the Allied organization cordially invites you to this "surgeon's eye" view of these operations.

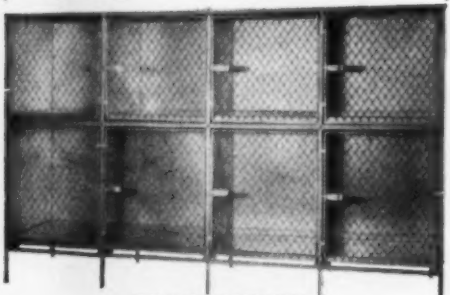
sponsored by

ALLIED LABORATORIES, INC.

Kennel Cage Units

of Wire Mesh and Metal

IN TWO TIERS: 4, 6, and 8 cage units
IN THREE TIERS: 6, 9, and 12 cage units
Sanitary, durable, and easily maintained; galvanized materials; removable pans; hand woven wire mesh doors, maximum light and ventilation; sized for dogs and cats; removable partitions; shipped crated; easily assembled.



THE EIGHT CAGE UNIT
manufacturers

EAST RIVER WIRE WORKS
39-40 Twenty-first St., Long Is. City 1, N.Y.

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Try

MASTYN

Udder Infusion Ointment

Each 20 gram udder tip tube contains:

Procaine penicillin 100,000 units

Dihydrostreptomycin 100 mg.

Sulfanilamide 30 gr.

Sulfathiazole 30 gr.

Bigger tube — Easier to handle

Larger volume permits thorough dispersion of medicaments

Higher Sulfa content — 60 grains per tube

Packaged in cartons of 6 tubes

6 tubes ..... 3.00 doz. 5.50

6 doz. .... 31.60 gross 57.60

Select Pharmaceuticals for the Veterinary Profession since 1918

CURTS-FOLSE *laboratories*

KANSAS CITY, KANSAS

(CLASSIFIED ADS—*continued from p. 42*)

with some industrial experience. Will consider June graduates. Send complete resume and salary requirements. Address "Box G 21," c/o JOURNAL of the AVMA.

WANTED—June, 1953, graduate as assistant in small animal hospital in New York City. Experience not essential. Opportunity for experience and advancement. State salary requirements. Address "Box G 17," c/o JOURNAL of the AVMA.

WANTED—veterinary pathologist for established diagnostic laboratory in New York. State full particulars of experience and education in first letter. Address "Box G 19," c/o JOURNAL of the AVMA.

WANTED STUDENT—summer position in small animal hospital in New York City. Experience unnecessary. Excellent opportunity for experience. Address "Box G 23," c/o JOURNAL of the AVMA.

WANTED—licensed veterinarian for modern small animal practice in New York State. Opportunity for progressively-minded individual. Excellent remuneration. Give qualifications and salary desired. Address "Box G 24," c/o JOURNAL of the AVMA.

WANTED—a veterinarian for permanent position on staff of four-veterinarian mixed practice in New Jersey. New small animal hospital, unexcelled facilities. Good roads and schools. State experience, salary expected, and references in first letter. Will answer all letters and return any photos. Address "Box G 31," c/o JOURNAL of the AVMA.

Wanted—Positions

WANTED—summer job with veterinarian. Completed first year in AVMA-approved school; one summer's experience on a farm; two years' experience as handyman with small animal practitioner. Desire work in large animal, or mixed, practice. Experience more important than salary. Address "Box G 2," c/o JOURNAL of the AVMA.

Graduate of AVMA-approved school, six years' experience, desires position in small animal practice. Would lease with option to buy. California only; married, veteran. Address "Box F 6," c/o JOURNAL of the AVMA.

(*Continued on p. 46*)

Sole Maker:
La Burdizzo, Turin, Italy

burdizzo

T. M. Reg.

bloodless castrator

The "Burdizzo" eliminates castration losses . . . no shrink . . no infections . . . no screwworm risks! Order from Jensen-Salsbery Laboratories, Inc.
Kansas City 10, Missouri

21 YEARS OF SUCCESS
...that's the record behind FRISKIES!

Cubes and Meal in 2, 5, 10, 25 and 50-Lb. Sizes

AS YOU KNOW, it's mighty important to feed a ration that's been tested and *proven!*

AND FRISKIES CUBES is just such a dog food! For it has been fed successfully to generations of dogs of all sizes and types.

THAT'S BECAUSE Friskies Cubes provide every food element dogs are known to need–in crunchy, ready-to-feed form that provides excellent exercise for teeth and gums.

FRISKIES is a combination of 19 separate, high-quality ingredients that provide variety at every meal . . . with a good "meaty" smell and taste dogs love.

ALL TYPES OF FRISKIES CONTAIN CHLOROPHYLLIN TO CONTROL DOG ODORS

BASED ON 50 YEARS' EXPERIENCE in animal nutrition, the famous Friskies formula means you are feeding a thoroughly tested dog food.

Tested for generations! Friskies has been checked and tested on dogs of all sizes and types. At the Friskies Research Kennels on the famous Carnation Milk Farm, generations of healthy, happy dogs have been raised on a diet of Friskies *alone.*

FRISKIES MEAL, same famous formula as Friskies Cubes . . . has 19 separate high-quality ingredients blended into a *true-type* meal. Mixed with water, it has a tempting texture and delicious "meaty" smell and taste!

KEEP YOUR DOG FRISKY WITH

Friskies

"The Meal of Champions"

ALBERS MILLING COMPANY • A DIVISION OF CARNATION COMPANY

Supplies Everything but Water!

Water is cheap—and it's the *only* thing you have to add to Kasco Complete Dog Ration! Kasco and water makes a complete, perfect meal for any normal dog.

KASCO MILLS, INC., TOLEDO, OHIO . WAVERLY, N.Y.

(CLASSIFIED ADS—*continued from p. 44*)

POSITION WANTED—veterinarian (Ind. '14) wishes to work with practitioner on salary. Have Iowa license. Address "Box G 11," c/o JOURNAL of the AVMA.

POSITION WANTED—desire permanent association with small animal practitioner in Washington, D.C., or vicinity. Graduate of approved school, small animal experience, married, draft exempt. References. Address "Box G 16," c/o JOURNAL of the AVMA.

Minnesota student completing Junior year wants to spend summer, 1953, with general practitioner in the Minnesota-Wisconsin-Iowa area. Address "Box G 26," c/o JOURNAL of the AVMA.

POSITION WANTED—in Public Health work by experienced veterinarian, age 30, married, good references. Will receive master of public health degree in June from an A.P.H.A.-approved university. Address "Box G 28," c/o JOURNAL of the AVMA.

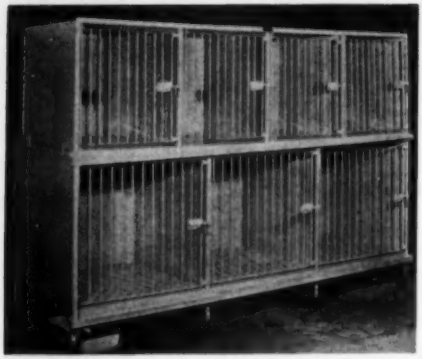
Experienced veterinarian, graduate of approved school, desires vacation relief work. Address "Box G 29," c/o JOURNAL of the AVMA.

WANTED POSITION—in mixed practice, or small animal hospital. Experienced; give salary and details. Would consider purchase with $10,000 maximum down payment. Address "Box G 30," c/o JOURNAL of the AVMA.

POSITION WANTED—six years' experience in small animal medicine, surgery, and hospital management. Graduate of an approved school, 35 years

(*Continued on p. 52*)

DE LUXE CAGES



IMPROVED 7-CAGE DE LUXE DRAIN UNIT

Also available in removable tray style, or plain, flat floor style in 3, 5, 7, or 12 cage units.

Note new style Bar Doors — Door frames, top and bottom, made of 1 inch tubes; water runs off instead of remaining on door frame.

IMPROVED DOG DRYER WITH ENTIRELY TRANSPARENT DOORS

Write for NEW cage booklet; also dryer folder

The 1953 price list is now available

Baltimore Wire & Iron Works

514 N. Jasper Street Baltimore 1, Maryland

Provides an accurate pattern against which to cut with knife or razor blade. Fits firmly, cannot move or slip when clamped into position. Made of non-rusting, light, cast aluminum, highly polished. Lasts a lifetime with minimum care. Simplicity of design and construction reduces possibility of breakage or mechanical failure. Forms immediately available to provide distinctive marking of these breeds:

Boxer — postpaid $15.00
Boston Terrier — postpaid $15.00
Great Dane — postpaid $15.00
Doberman — postpaid $15.00
Set of above four — postpaid $50.00

These patented "championship" forms are patterned after markings of winners of top honors in show competition. Forms for other breeds made on special order. Sold to veterinarians only. Send check or money order.

MacALLAN LABORATORIES

Route No. 2, Box 420 Lansing, Michigan

a NEW non systemic sulfonamide

Thalisul

for
intestinal bacterial infections of animals

- **THALISUL** is relatively non-toxic.
- **THALISUL** is absorbed into the intestinal wall.
- **THALISUL** produces effective concentrations in the intestines.
- **THALISUL** is only sparingly absorbed into the blood stream.
- **THALISUL** is effective against intestinal infections in dogs' and calf scours.

Supplied in 0.5 Gm. (7.7 gr.) and 2 Gm. (30 gr.) tablets in Bottles of 100 and 500

MASSENGILL Bristol, Tenn.
Veterinary Division

THALISUL
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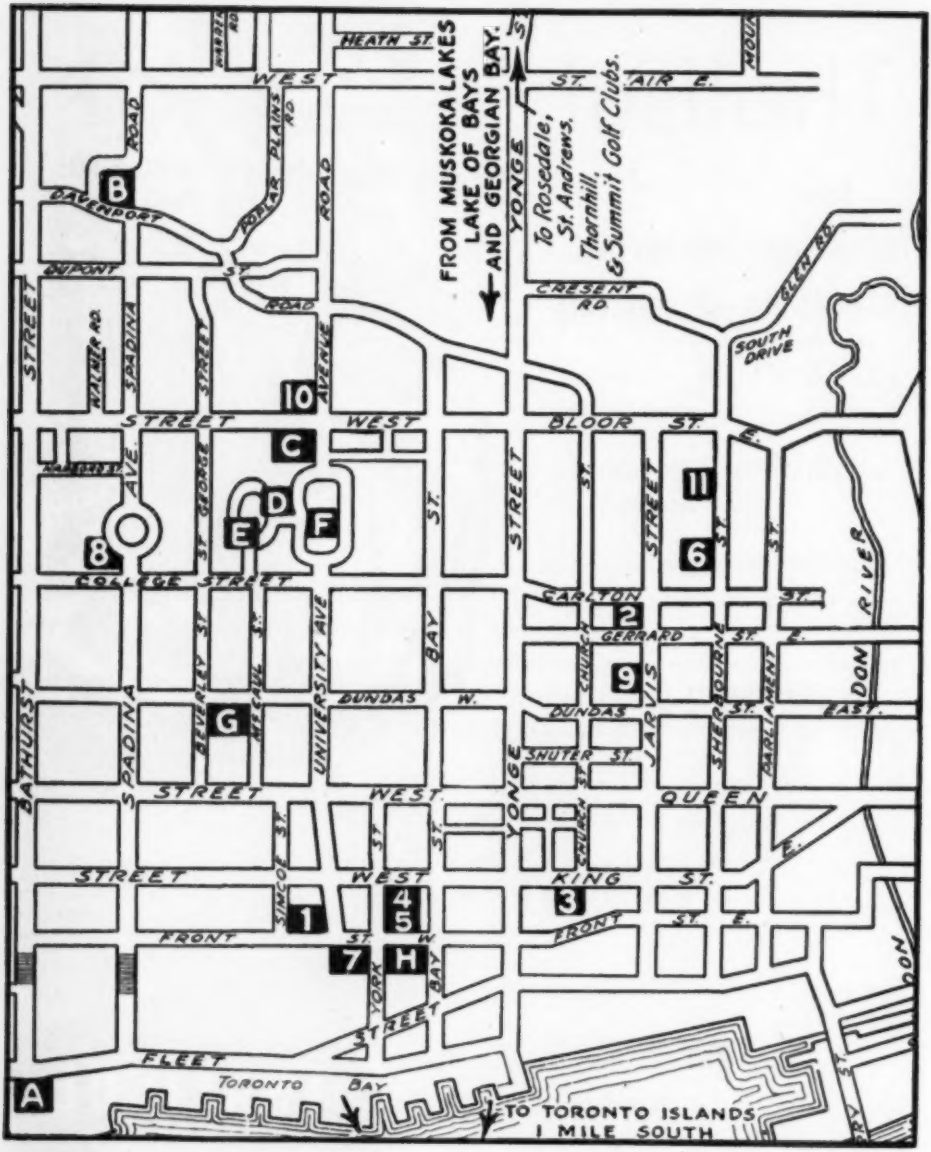
ref.
Rogoff, George, Phthalylsulfacetamide in Veterinary Medicine, Jauma (Sept. 1950)
Christian, A. B., To Be Published



1. The Barclay
2. Frontenac Arms
3. King Edward
4. Prince George
5. Royal York
6. St. Regis
7. Walker House
8. Waverley
9. Westminster
10. Park Plaza
11. Selby

A. Baseball Stadium
B. Casa Loma
C. Royal Ontario Museum
D. Hart House
E. University of Toronto
F. Parliament Buildings
G. Art Gallery of Toronto
H. Union Station

HOTEL RESERVATIONS — TORONTO CONVENTION

Ninetieth Annual AVMA Meeting, July 20-23, 1953

All requests for hotel accommodations will be handled by a Housing Bureau in cooperation with the Committee on Local Arrangements. The Bureau will clear all requests and confirm reservations.

HOTELS AND RATES

HOTEL	SINGLE	DOUBLE	TWIN BEDS
1. The Barclay	$4.50 up	$6.00-8.00 up	$7.50-8.50 up
2. Frontenac Arms	$6.00	$8.00	$8.00 up
3. King Edward	$5.50 up	$9.50 up	$10.25 up
4. Prince George	$4.50 up	$6.50 up	$6.50 up
5. Royal York	$7.50 up	$11.50 up	$11.50 up
6. St. Regis	$5.50-6.00	$7.50 & 8.50	$8.50 up
7. Walker House	$4.00	$7.00	$7.00
8. Waverley	$3.50 up	$6.50-7.50	$7.00
9. Westminster	$5.00 up	$6.00 up	$6.00 up
10. Park Plaza	$7.00-9.00		$10.00
11. Selby	$3.50	$5.00-6.00	

Motor Hotels (Motels)

	Single	Double
12. The Guild Inn (5 mi. east of Toronto)	$6.50	$9.00
13. Alda Motel (about 10 mi. east of Toronto)		$7.00
14. Lido Motel (about 10 mi. east of Toronto)		$8.00
15. Sunnyside Motor Hotel (Lake Shore Rd. at western entrance to Toronto)		$9.00

Cut Off Here

HOTEL RESERVATION FORM — AVMA CONVENTION

To: Housing Bureau, Toronto Convention & Tourist Assn., 30 Bloor Street, West, Toronto 5, Ontario

Date .....

Please make reservations indicated below:

(Three Choices MUST Be Shown)

First choice hotel .....

Second choice hotel .....

Third choice hotel .....

Accommodations and Rates Per Day Desired:

☐ Single room at $.....

☐ Double-bed room at $.....

☐ Twin-bed room at $.....

☐ Suite* at .....

Arriving on (date) ..... at ..... a.m. ..... p.m.

Leaving on (date) ..... at ..... a.m. ..... p.m.

Room will be occupied by (attach list of additional names if necessary). *Do not make reservations for others without prior arrangements with them.*

Name ..... City and State or Province .....

Name ..... City and State or Province .....

Your Name (print or type) .....

Street Address .....

City ..... State or Province .....

*Those desiring suites of rooms should send the Housing Bureau complete information as to accommodations and rates desired.

Correspondence

Feb. 26, 1953

The AVMA Ethics Committee

Gentlemen:

Is it ethical to have printed on my statements the following:

All accounts are due within thirty days from time statement is rendered. Accounts over sixty days to draw 6 per cent interest unless arrangements are made for payment.

Also is it correct to state on the statement that I am a member of the credit association and to include slips issued by the credit association with the statement.

I will appreciate this information and a booklet with more information on the code if there is one available.

Very truly yours,
J. H. C.

• • •

March 17, 1953

Dear Doctor:

Your letter of February 26th has been received.

. . . .

We wish to encourage sound financial and professional record-keeping by members of the veterinary profession. We believe that professional *statements* may include the fact that a doctor is a member of a credit association. Printed information prepared by the credit association may be included along with the statement and be ethical in nature. An announcement telling of the type of financial credit rendered by the doctor to his clients may be printed on the statements.

We are enclosing a copy of the Code of Ethics of this Association as requested in your letter. Thank you for the opportunity to offer our opinion. If we may be of further service to you, please let us know.

Very sincerely yours,

AVMA COMMITTEE ON ETHICS
s/Raymond C. Snyder, V.M.D.,
Secretary.

March 16, 1953

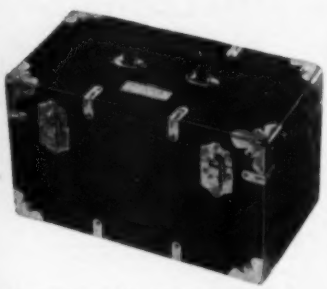
Editor:

Following publication in the March JOURNAL (adv. pp. 51-53) of comments on the fracture case treated by an orthopedic surgeon, a letter was received from Dr. W. T. Galbraith (OVC '17) of Altoona, Pa. Following are excerpts from his letter.

The late Dr. Dan Hamilton, Harriston, Ont.,

(Continued on p. 54)

CASES



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Serums and/or Instruments

NEAT
STURDY
PRACTICAL

Plywood Construction — covered with sheet steel — Black, baked enamel finish, brass trim, corner reinforcements — Full length and width tray for instruments or accessories — Ideal as "auto kit".

For Further Information write

Nicholson Manufacturing Inc.
2540 E. 3rd Ave.
DENVER 6, COLORADO

RIVERSIDE ALL STEEL KENNELS—QUALITY FIRST

Seven Compartment. Upper tier 22x20x30. Lower tier 28x28x30 Five Compartment. Upper tier 22x20x30. Lower tier 27x31x30. Sliding doors may be installed between openings for extra large cages if desired. MINOR CHANGES IN DESIGN AND EQUIPPED WITH 3-inch ball bearing CASTERS AT NO EXTRA COST. Foolproof latches and identification tags on steel barred doors. Bottom cages have six-inch ventilating strip. Shipment FOB our plant.

Send For
Descriptive Literature

TERMS MAY BE ARRANGED IF DESIRED

A lifetime of service and guaranteed by one of California's oldest iron works.

RIVERSIDE IRON WORKS
5422 Mission Blvd. Riverside, California

Proved Effective Against

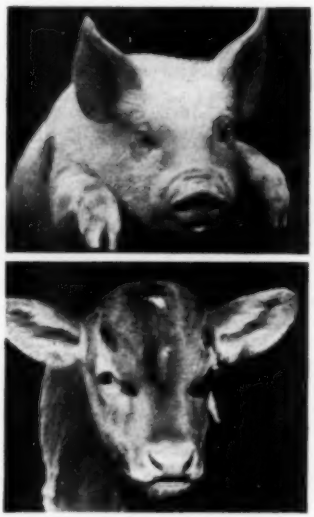
Swine Enteritis and Calf Scours

GRANULES OF

VetStrep

(Trade-Mark)

(STREPTOMYCIN SULFATE ORAL VETERINARY, MERCK)



VetStrep, soluble granules of streptomycin, offers the advantages of efficiency, economy, and ease of administration. These granules dissolve readily in drinking water or milk.

VetStrep contains streptomycin, proved effective against both primary and secondary organisms most often responsible for enteritis in hogs, calves, dogs, and quail.

Extensive field trials have demonstrated that VETSTREP often clears up *swine enteritis* and *calf scours* in as little as one day. A summary of these studies is available on request.

VetStrep is packaged in convenient sizes available to veterinarians through their usual sources of supply.

SUPPLIED:
In screw-cap bottles of 15 Gm., 75 Gm., and 750 Gm.

Research and Production for Better Animal Health

MERCK & CO., INC.
Manufacturing Chemists
RAHWAY, NEW JERSEY

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What makes them come back for more?

Throughout the dairy regions, more and more veterinarians are realizing that when they dispense MASTICS P & S for mastitis control and instruct farmers in the necessary sanitary procedures, it invariably means repeat business. *Why* do the farmers come back for more . . . over and over again?

Probably the first and foremost reason is that MASTICS P & S are the most economical preparation available for the treatment of mastitis. But the price alone doesn't bring in repeat orders. It takes a combination of price *plus* effectiveness to do that. And MASTICS P & S are *really* effective.

There is no better form of treatment known for the control of mastitis than the combination of penicillin and dihydrostreptomycin, such as contained in MASTICS P & S. And nothing surpasses penicillin for treating staphylococcic infections.

A new dosage form of MASTICS P & S is now available, with greatly increased potency—100,000 units of penicillin and 50,000 micrograms of dihydrostreptomycin in each individually foil-wrapped bougie.

There's been a substantial price reduction, too, making MASTICS P & S the best dose-for-dose and dollar-for-dollar buy. Boxes of 25 cost only $4.75, 100's are $18.00 and 500's are $80.00.

You can help the farmers in your community save money in treating mastitis—and you will help yourself, too. Write us for dispensing samples and find out why the farmers come back for more. The Martin Laboratories, Dept. C, P.O. Box 532, West Chester, Pa.

(CLASSIFIED ADS—*continued from p. 46*)

of age, married, draft exempt, reliable, no bad habits. Would like to associate with progressive practitioner where there is a future. Prefer Arizona, California, or Florida, but will consider other locations. Wife's health is reason for changing locations. Give full particulars in first letter. Address "Box G 32," c/o JOURNAL of the AVMA.

POSITION WANTED—young, married, veterinarian, draft exempt, some experience both large and small animals. Desires position with practitioner in Middlewest or West. Licensed in several states. All inquiries answered. Address "Box G 34," c/o JOURNAL of the AVMA.

Wanted—Practices

PRACTICE WANTED—busy mixed practice in Pacific Northwest by experienced married veterinarian. Address "Box F 22," c/o JOURNAL of the AVMA.

WANTED TO LEASE—good growing practice with opportunity for partnership or purchase. Prefer Pacific Coast area. Address "Box G 7," c/o JOURNAL of the AVMA.

PRACTICE WANTED—Georgia or Alabama location desired by recent veteran with several years' experience and sufficient funds to purchase. Prefer mixed practice. Address "Box G 12," c/o JOURNAL of the AVMA.

PRACTICE WANTED—looking for a large animal or mixed practice. Prefer Northeast. Three years' experience in a mixed practice. Married veteran. Address "Box F 24," c/o JOURNAL of the AVMA.

1951 graduate of AVMA-approved school wants to buy predominantly large animal practice. Any location considered; Middlewest preferred. Have substantial down payment. Address "Box G 27," c/o JOURNAL of the AVMA.

Wanted to Buy

WANTED TO BUY—fully equipped small animal hospital in West or Southwest state that recognizes California license. Give essential information. Want quality proposition. Address "Box G 5," c/o JOURNAL of the AVMA.

WANTED TO BUY OR LEASE—small animal hospital in Florida. Prefer the Gulf Coast. Address "Box G 18," c/o JOURNAL of the AVMA.

WANTED TO BUY—experienced veterinarian wants small animal hospital, preferably with residence. Licensed in Connecticut, New York, Pennsylvania, and Ohio. Substantial down payment available. Address "Box G 25," c/o JOURNAL of the AVMA.

(*Continued on p. 56*)

WHITE'S ANIMAL CASTRATION

A new textbook for TEACHERS, STUDENTS and PRACTITIONERS.

Price $7.50

For sale by book dealers, also by the Author, George Ransom White, M.D., D.V.M., P. O. Lock Box 903, Nashville, Tennessee.

Adrenomone

Long-Acting Veterinary Corticotropin (ACTH) in Gelatin

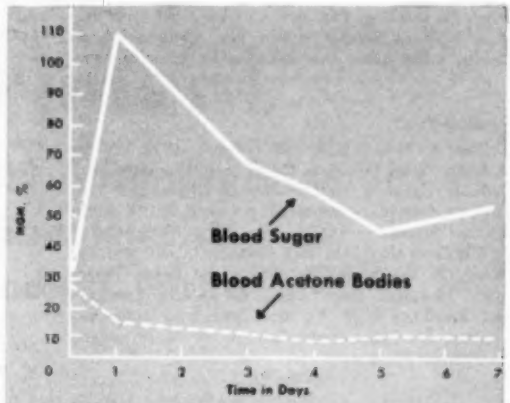
ARMOUR

New, Specific Therapy of Ketosis

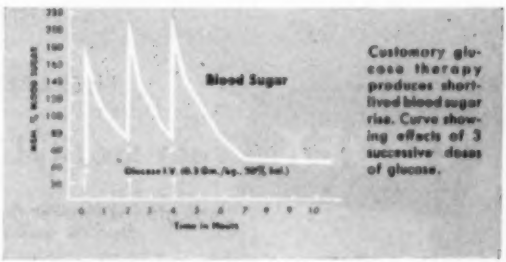
A single injection of Adrenomone rapidly reverses the symptoms of ketosis in dairy cows in the majority of cases. The metabolic disturbance is corrected and milk production is quickly brought back to normal. Adrenomone is superior to all other known forms of treatment because it is truly specific—effective in nearly all instances—rapid-acting—simple to administer—and economical.

Adrenomone is standardized in Armour Veterinary Units.

Available in 5 cc. and 10 cc. vials containing 20 A.V.U. per cc. Also supplied in 10 cc. vials containing 60 A.V.U. per cc.



Specific effect of Adrenomone showing rapid recovery from single injection of 600 A.V.U.



Customary glucose therapy produces short-lived blood sugar rise. Curve showing effects of 3 successive doses of glucose.

*Administration of glucose

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(CORRESPONDENCE—*continued from p. 50*)

who was a blacksmith before qualifying as a veterinarian, made his own screws and performed similar surgery in 1905, employing the same technique as that of the orthopedic surgeon. The late Drs. C. S. Tamlin, W. J. Wilson, and Wm. MacDonald, all of London, Ont., performed this surgery with skill. I, too, have carried it out with success both in Great Britain and Canada as, no doubt, many other veterinarians in America have.

March 11, 1953

Dear Editor:

The AVMA JOURNAL (March, 1953:51) has a letter from Dr. Arburua of San Francisco, tentatively claiming membership in the longest continuous veterinary partnership (since 1919) in the United States.

I believe that Drs. Ray Gannett (COR '05) and Harry B. Risley (COR '09) of the Berns Veterinary Hospital (established 1879), 59 Lawrence St., Brooklyn 1, N. Y., have been associated since shortly after the graduation of the latter, nearly forty-four years ago.

Sincerely,
s/Victor I. Sorgen, D.V.M.,
Essex, Md.

March 3, 1953

Dear Editor:

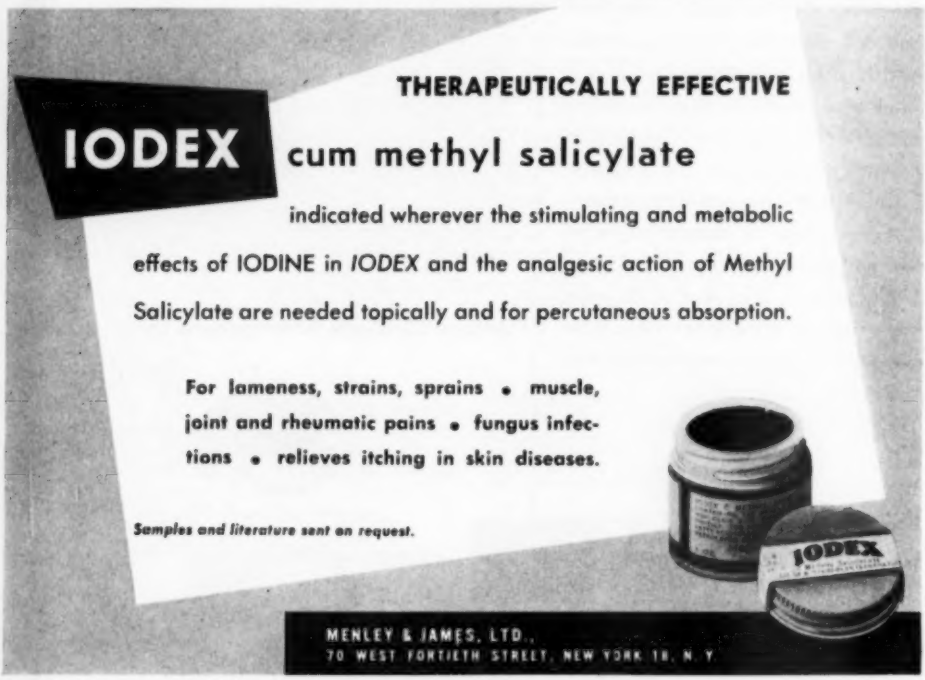
In the March, 1953, issue of the JOURNAL, there is an article on "A Disease of Turkeys Characterized by Deformity of the Tongue," by V. L. Sanger, *et al.* The authors are apparently under the impression that Grau, whose reference was cited, was the first to describe this disease in 1945. I should like to call attention to an article by Mr. Charles B. Hudson of our department entitled "Curled Tongue in Young Poults," *J.A.V.M.A.*, vol. 94, No. 6, June, 1939, page 662, which is undoubtedly the same condition.

I am sure that the authors of the recent article will be glad to learn of this earlier description.

It might be added that after the case history was written, it was learned that the disease could be produced at will by a certain commercial feed and that it could be cured by changing the ration.

Sincerely Yours,
s/ F. R. Beaudette, D. V. M.,
New Jersey Agricultural Experiment Station.

The veterinarians referred to in an item which appeared in the "Correspondence" section (p. 51) of the March, 1953, JOURNAL report that they did not refuse to attempt to reduce the fracture of the dog referred to. When the owners were told that the operation would be expensive they did not leave the dog for further treatment. Apparently through some mutual friends the owners were able to get the orthopedic surgeon to do the surgery for the "experience."—Ed.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(CLASSIFIED ADS—*continued from p. 52*)

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FOR SALE—long-established 60-40 mixed practice in the Southeast grossing $65,000 annually. Beautifully equipped new brick 54-cage hospital with air-conditioned home combined. Will sell real estate and equipment, including x-ray, 2-way radio, autoclave, normal inventory, kennels, for $75,000. Am retiring. Requires two men. Third down and balance monthly at 4%. Will not lease. Address "Box F 5," c/o JOURNAL of the AVMA.

FOR SALE OR LEASE—with option to buy. Southern California small animal hospital now at one man capacity. No real estate. Low price lenient terms. Address "Box W 17," c/o JOURNAL of the AVMA.

FOR SALE—beautiful ranch style home with clinic. Mixed practice; expansion unlimited. Southern California resort town. Sell for real estate value. Terms. Address "Box F 13," c/o JOURNAL of the AVMA.

FOR SALE—new brick hospital in southern state. Winters mild, practice not strenuous. 70% small animals; big future in dairy work. Net $10,000 first year. Very little early morning and night work. $12,500 to handle, balance $150 per month. Address "Box D 7," c/o JOURNAL of the AVMA.

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(*Continued on p. 60*)

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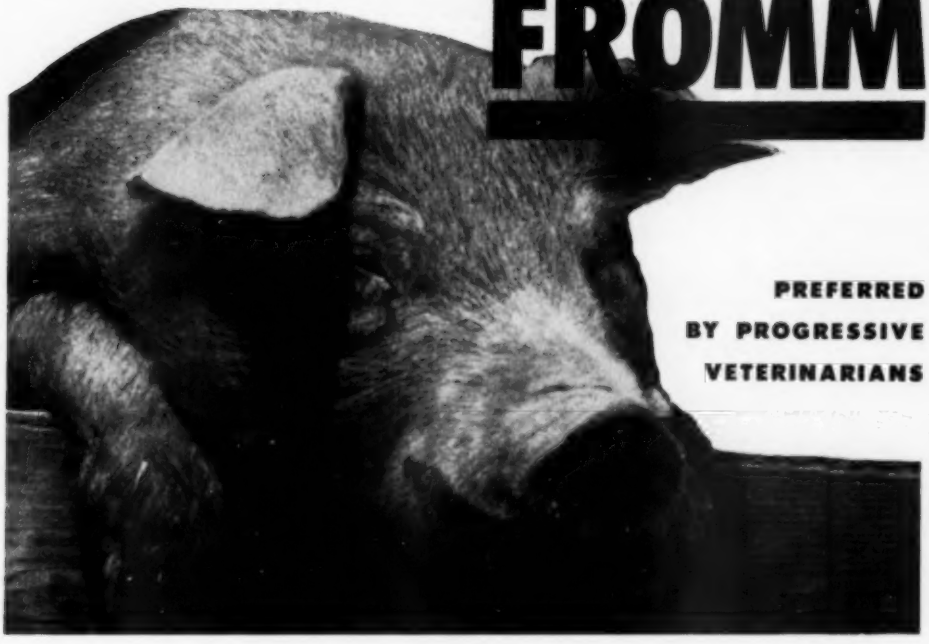

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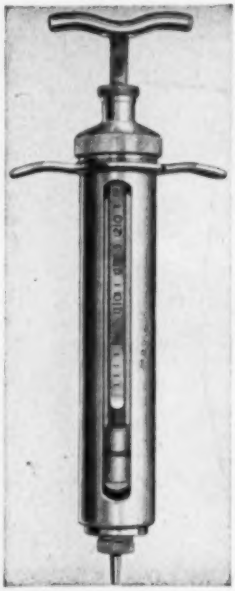

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(CLASSIFIED ADS—*continued from p. 56*)

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FOR SALE—veterinary practice with home and small modern animal hospital, with kennels and concrete runways, on 41 acres of land in Sewickley Heights Township, Pennsylvania, approximately 10 miles outside the City of Pittsburgh. Includes all equipment, drugs, and instruments. Death makes sale imperative. Address "Box G 3," c/o JOURNAL of the AVMA.

FOR SALE—mixed practice established 39 years. Includes 8-room bungalow, small animal hospital, kennels, and separate cattery. Convenient terms can be arranged. Address "Box G 6," c/o JOURNAL of the AVMA.

FOR SALE—veterinary clinic in northwestern Arkansas. Available for purchase August 1, 1953; 80% large, 20% small. Grossed $11,000 in first year—60% net. College town of 5,000. Price, $2,500, including medicine and equipment. Reason for leaving, health. Address "Box G 8," c/o JOURNAL of the AVMA.

FOR SALE OR LEASE—in southwestern Michigan, equipped small animal hospital and mixed practice. Outskirts of city of 60,000 on Detroit-Chicago highway. Address "Box G 13," c/o JOURNAL of the AVMA.

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(*Continued on p. 62*)

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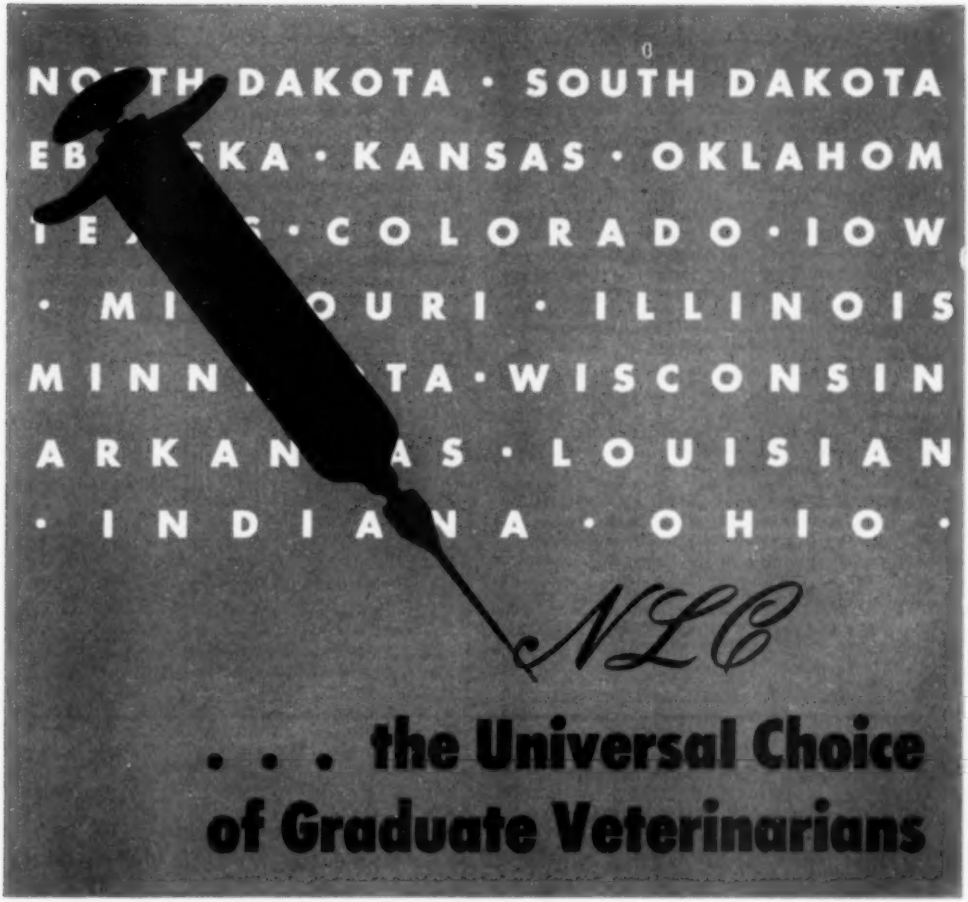
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(*Continued on p. 63*)

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Manuscripts.—Manuscripts must be typewritten, double-spaced, on 8½ by 11 in. bond paper, and the original, not the carbon copy, submitted. One-inch margins should be allowed on the sides, with 2 in. at top and bottom. Articles should be concise and to the point. Short, simple sentences are clearer and more forceful than long, complex ones. Footnotes and bibliographies also should be typed double space and should be prepared in the following style: name of author, title of article, name of periodical with volume, month (day of month, if weekly), and year.

Illustrations.—Photographs should be furnished in glossy prints, and of a size that will fit into the Journals with a minimum of reduction. Photomicrographs which cannot be reduced should be marked for cropping to 1-column or 2-column width. Drawings should be made clearly and accurately in India ink on white paper. Figures appearing on graphs or charts should be large enough to allow for reduction necessary for the chart or graph to fit on Journal pages. All illustrations should bear the name of the author on the back.

Tables.—Tables should be simple and typed double-space. Complex tables are not conducive to perusal. It is wiser to summarize complex material rather than to attempt to tabulate it.

News.—Secretaries of associations and readers are requested to send us announcements of meetings and news items.

Anonymous Letters.—Anonymous communications, of whatever nature or purpose, to the JOURNAL or to the Association will not be published or referred for consideration to any Association official or committee.

AMERICAN VETERINARY MEDICAL ASSOCIATION

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Chicago 5, Illinois

(CLASSIFIED ADS—*continued from p. 62*)

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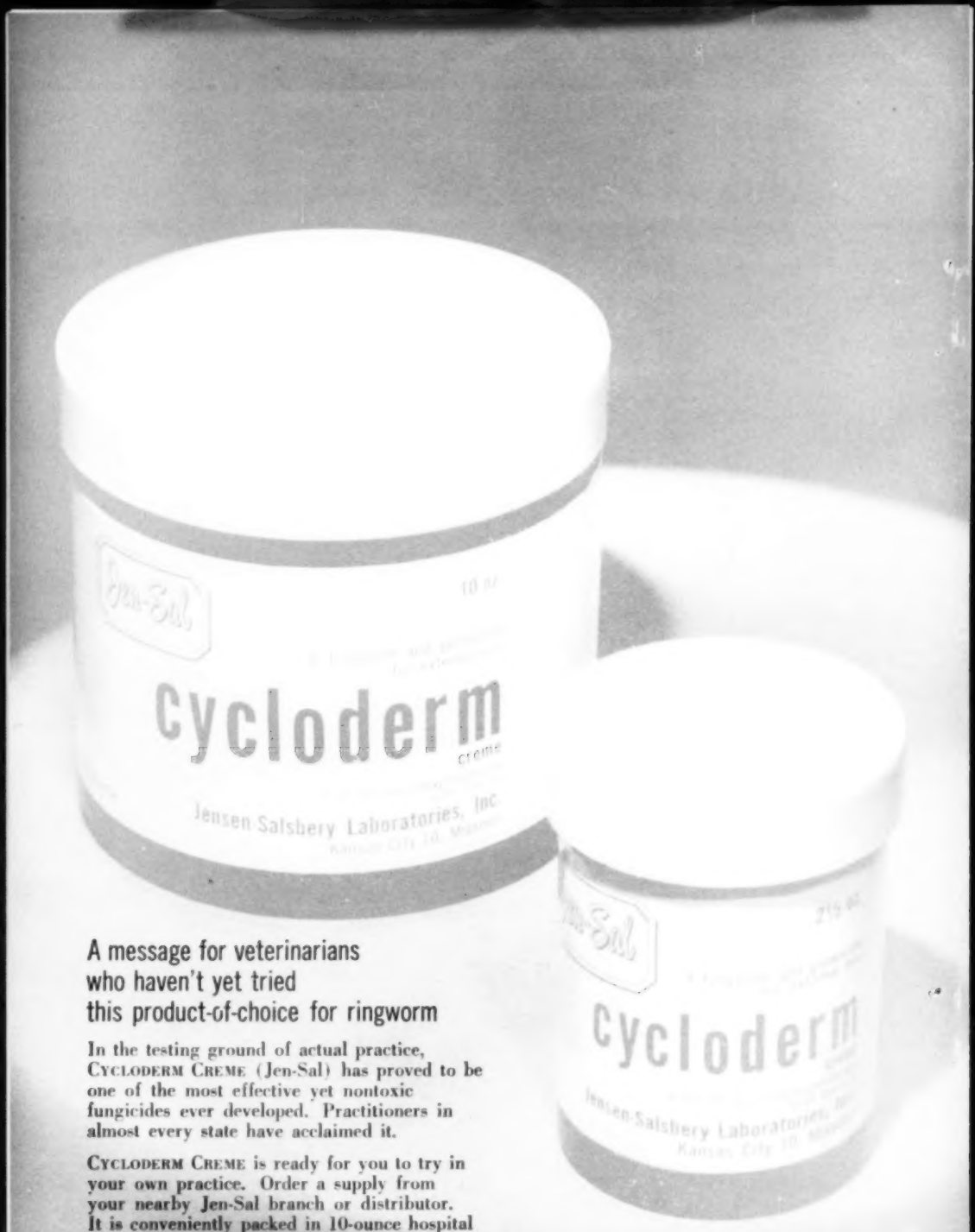

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